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ABSTRACT

This bulletin contains English translations of two original research papers dealing with education in Japan. Summaries in English of research activities of the Japanese National Institute for Educational Research (NIER) are also included. The first research paper is a "Survey of Opinions Concerning the Reform of Compulsory Education." After World War II, the compulsory education system of Japan was reformed and converted into a six-year elementary school, three-year junior high school system. The survey points out that Japanese education needs to improve course content and teaching methods and to develop individualized instruction. The researchers also think that a gradeless system would be desirable. The second paper deals with "Aesthetic Education in Japan." A state of the art review on Japanese aesthetic education is presented and creativity development in fine arts education is examined. The major goal of Japanese fine arts education is to help children develop a rich imagination and flexible ideas. The research activities of NIER, which are summarized briefly in the last part of the bulletin, include the following: "IEA Second Math Study;" Basic Study on Promoting Development in Children Failing in Schoolwork;" "Research and Development for Environmental Education Curriculum;" "Evaluation of Problem-centered CAI Learning Programs for Upper Secondary Physics;" and "Language Expression and Concept Formation in Science Education." (Author/RM)

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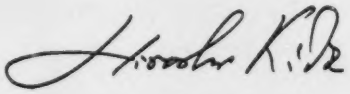
FOREWORD

The reports compiled in this issue are original papers and translations of summaries of the original Japanese papers appeared in the Research Bulletin of our institute. This has been done in the hope that they can also be available to those concerned with related fields abroad.

We shall be very happy if these short English versions of the above-mentioned research will be of help in understanding various aspects of educational research and problems in our country.



Hiroshi Kida
Director General

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SURVEY OF OPINIONS CONCERNING THE REFORM OF COMPULSORY EDUCATION

Shūji HIMATA

Introduction

After World War II, the compulsory education system of Japan was reformed and converted into a 6-year elementary school, 3-year junior high school system. This was a revolutionary event in the historical development of the compulsory education system. Twenty years after this reform, the new system appears to have become stably established, but at present a wide variety of problems due to rapid social progress demand solution in the form of improvements in the system. Thus, in August, 1970, the National Education Research Association carried out an investigation of the opinions of educational personnel throughout the country concerning the problem of the reform of compulsory education.

The aim of this investigation was to clarify and analyze the facts concerning the opinions of teachers, instruction supervisors, and education research center personnel, especially their attitudes toward making changes in the present system, and on this basis prepare basic data on the reform of the 6-3 system. For these purposes, two areas for investigation – problems concerning the organization of elementary and junior high school education and the reform of educational content and methodology – were chosen, topics for each area were established, and a questionnaire was prepared. This questionnaire was then sent to elementary and junior high school teachers selected by a nation-wide sampling procedure and to teacher consultant and education research center personnel, as follows:

Elementary School Teachers	1,628
Junior High School Teachers	1,952
Teacher Consultant	2,361
Education Researchers I	1,032
(Prefectural and Designated Metropolitan Research Centers)	
Education Researchers II	306
(Ward, City, Village, and Private Research Centers)	7,279

The following report is based on a report with the same title published by the National Federation of Educational Research Institutes in Japan and presents an analysis and discussion of selected problems concerning the organization of elementary and junior high schools and the content and methodology of education.

CHAPTER I Organization of the 6-3 Education System

1. Opinions Concerning the Present Uniform April Enrollment Policy

It is said that mental and physical development during the period of infancy is remarkable, and that at lower ages differences in development are very great, depending on differences in the growth period being experienced by the individual. On the other hand, under the present system, children are enrolled in elementary school in the April after their sixth birthday, regardless of when their birthday is. As is well known, however, this is not necessarily the policy of other countries.

In this investigation, the respondents were asked to indicate thier opinions concerning the present enrollment policy, that is, whether they support it or whether they think that, due to great differences in children born more than half a year apart, the system should be changed so that children born closer together are enrolled together. The results are shown in Table I-l.

Table I-1. Time of Enrollment in Elementary School

( ) Actual Figures

	No Response	Present System	According to Development of Child	I don't know	Total
Elementary School	0.9%	75.9	20.4	2.8	100.0% (1,591)
Teacher Consultant	0.6	73.7	24.6	1.1	100.0 (2,361)
Researchers I	0.4	63.7	33.2	2.4	100.0 (1,032)
Researchers II	0.7	62.1	34.6	2.6	100.0 (306)
Kindergarten	1.4	71.6	17.5	9.5	100.0 (440)
Nursery School	0.7	66.6	23.6	9.0	100.0 (575)

1. Problematical Uniform Enrollment

As a general trend, the present enrollment policy is supported by a very large number of respondents. Here it should be noted that the highest rate of support, 75.9%, is that for elementary school teachers, who responded on the basis of experience which is closest to the matter under consideration.

This can probably be interpreted as being the result of the following way of thinking, i.e., that even though there are great developmental differences among children in

the same grade under the present system, rather than change the system it is more educational to adapt instruction to individual differences by giving careful consideration to such matters in the selection and use of instructional methods. In any case, the results of the present opinion survey reveal the strong influence of a way of thinking placing great weight on age, so that here the overall emphasis is on "providing equality of opportunity to develop the abilities of children."

Nevertheless, an inspection of the opinions of teachers of different ages reveals rather large differences according to the age of the respondents. As Table I-2 shows, support for the present enrollment system is 69.2% for 25 year old teachers, 72.6% for 35 year old teachers, 78.9% for 45 year old teachers, and 82.1% for 55 year old teachers. There is thus a clear trend toward increasing support for the present system as age increases. This can probably be taken to mean that, in the case of the older 55 year old respondents, who include large numbers of principals and head teachers, there is a somewhat conservative, defensive attitude toward the present system, or that their responses reflect a strong attachment to the status quo and a lack of firm awareness of problems with the present system. In any case, it can be said that it was difficult for older respondents to take a flexible attitude toward the system and problems involved here.

Table I-2. Opinions Concerning Time of Enrollment by Age of Respondent

( ) Actual Figures

Age	No Response	Present System	According to Development of Child	I don't know	Total
25	1.5%	69.2	22.7	6.6	100.0%
35	0.9	72.6	24.0	2.6	100.0
45	0.6	78.9	19.0	1.4	100.0
55	0.6	82.1	15.8	1.5	100.0
Total	0.9	75.9	20.4	2.8	100.0 (1,591)

Finally, 2.8% of elementary school teachers and 2.6% of education researchers responded with "I don't know," which can be considered the result of inability to make a judgment due to lack of information concerning this matter.

2. Flexible Attitudes Toward Change

According to the present survey results, it is clear that on the whole the re-

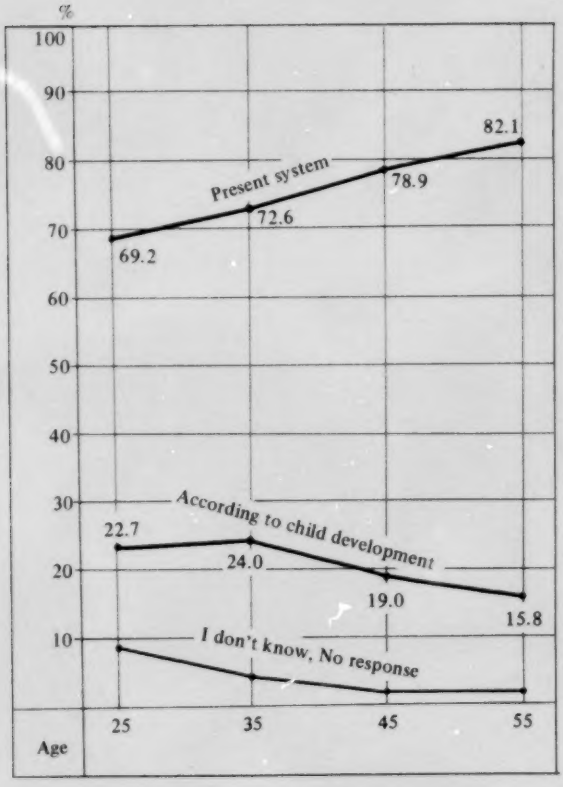

Fig. I-1. Time of Enrollment by Age of Respondent

spondents have not reached the point of being able to support change in the present enrollment system. However, it is important to consider the fact that in the shadow of this general trend there exists a group of respondents (composing fully 20% of the sample) who think that the time of enrollment should be adjusted in order to deal with differences in the level of development of children. (See Table I-2.)

It is further to be noted that the respondents no doubt considered factors which make it difficult to change the present policy of uniform enrollment in April, and yet expressed criticism of the present system through the opinion that serious consideration should be given to this problem in terms of system factors and at the same time steps should be taken so that adequate individual instruction can be provided on the basis of individual differences. In particular, this indirect criticism was strong among younger respondents, who showed a greater degree of such flexibility in thinking than older respondents.

II. Organization of Grades and Classes

In this investigation we also sounded out opinions concerning the way in which grades and classes are formed. That is, we asked the respondents whether the present method of forming grades and classes only of students of the same age level was appropriate, or whether the developmental differences in children should be used as the basis for grade and class formation without being overly particular about age.

1. Thinking Concerning the Present Method of Forming Grades and Classes

As is clear from Table I-3, which shows the overall results concerning class formation, 74.3% of the elementary school teachers and 80.6% of the junior high school teachers feel strongly that classes should be formed of students of the same age. From the content of the choice alternatives in the questionnaire, these general results can be

Table I-3. Class Formation

( ) Actual Figures

	No Response	Flexible Formation	Groups of Same Age	Total
Elementary School	1.2%	24.5	74.3	100.0% (1,591)
Junior High School	1.8	17.6	80.6	100.0 (1,884)
Teacher Consultant	1.1	35.2	63.7	100.0 (2,361)
Researchers I	0.8	45.2	54.1	100.0 (1,032)
Researchers II	3.9	50.7	45.4	100.0 (306)

thought to express one of two basic opinions, i.e., (1) that even though differences in developmental progress may exist, carrying out education in groups containing children of the same age is effective in promoting social growth; therefore classes should be formed on the basis of age; and (2) since the present system is firmly established and has a long history, it is best to form classes of children of the same age. From a different viewpoint, these results can also be considered to reflect the passive attitude that the developmental difference problem is not serious enough to warrant changing the present system of grade and class formation.

However, in view of the fact that there is a serious demand for individual instruction designed to provide adaptation to the development level of each student and achieved through the reform of educational methodology, the continuing formation of learning groups on the basis of a rigid "same age" policy is rather strange. It seems clear that the time has come to seriously consider the implementation of a flexible

policy which allows the formation of various kinds of learning groups without excessive concern for age, thus making it more possible to adequately develop the abilities of each student.

2. Toward Flexible Class Formation

As we have seen, 24.5% of the elementary school teachers and 17.6% of the junior high school teachers have doubts about the "same age" class and grade formation policy and showed interest in a flexible formation policy, even though the majority of teachers around them are bound by habit to the present system. In addition, instruction supervisors and research personnel showed even greater interest than the elementary and junior high school teachers. In particular, the researchers, contrary to the school teachers responding on the basis of their daily instruction experience, responded as researchers viewing the school situation and supported flexible formation at a high rate of 50.7%.

This is perhaps related to the fact that the very term "flexible formation" is often heard in the conversation of researchers and instruction supervisors, but does not seem to be a topic of conversation among school teachers. This can be considered to be the result of the fact that, since school teachers are unavoidably involved in the present system, it is difficult for them to take a flexible attitude and consider other possibilities seriously. That is, even though differences in the ability development of individual students are clearly apparent, teachers continue to support the present system because they have not fully realized that the problems involved in the present situation are their own problems which they can and should do something about.

In this regard, however, there is frequent discussion of the adoption of such approaches as team teaching, based on the thinking that demonstrated learning ability varies according to the learning environment and instructional methods used. In this context, in schools where rigid grade and class limitations are not adhered to in the provision of instruction, the term "flexible formation" and discussion of its advantages can be heard in teacher conversations.

It can therefore be said that in the future the limits of the possibilities for individual instruction and its diversification will become increasingly apparent, and at the same time there will be an unavoidable increasing lack of attention to the development of many of the known multi-dimensional abilities of individual children. Thus it will become necessary for teachers to maintain a flexible way of thinking which allows them to find ways to form learning groups in which the various potentialities of students can be developed through more active, direct, and suitable efforts.

III. Appropriate Size of Classes from the Standpoint of Instruction

As the focal point of instructional activity, the class unit has an important mean-

ing, as is well understood. In this investigation, therefore, we asked teachers to indicate their opinions concerning the appropriate size of classes, especially regular classes, in the light of their daily classroom experience. That is, we sought to clarify the thinking of teachers concerning the present class size situation, as viewed in terms of the most convenient size for detecting and dealing with individual characteristics and environmental differences among students, and for the effective provision of individual instruction.

For these purposes, we asked the respondents to indicate whether the size of their present class(es) was too large, just about right, or too small. Thus, on the questionnaire there was also provision for the indication of the size of each class being taught by the respondent. The results showed great variation in class size from school to school, which allowed the tabulation of opinions for a wide range of class sizes.

1. Opinions of Elementary School Teachers

First, we will consider the opinions of elementary school teachers. These teachers are often heard to say that classes are too large and therefore difficult to handle. We will therefore give first attention to the number of students which the teachers consider too large. On the basis of Table I-4, it seems that classes of more than 36

Table I-4. Class Size (Elementary School)

( ) Actual Figures

Opinion / Students per Class	No Response	Too Large	Just About Right	Too Small	Irrelevant Response	Total
No Response	90.3%	3.5	3.2	0.8	2.2	100.0%
Under 20	0.8	2.1	56.0	41.1		100.0
21–25	1.9	3.7	83.2	11.2		100.0
26–30		1.5	93.9	3.8	0.8	100.0
31–35		15.7	83.2		1.0	100.0
36–40	0.4	50.5	48.7		0.4	100.0
41–45		87.8	11.8		0.4	100.0
Irrelevant Response		3.4	6.9		89.7	100.0
Total	21.4	25.4	43.3	7.5	2.5	100.0 (1,591)

students are especially considered to be too large. That is, 50.5% of the teachers with

classes of 36–40 students and 87.8% of the teachers with classes of 41–45 students responded that their class size was too large. Thus, from a size of 36 students upwards, teachers are consciously aware of instructional difficulties and problems in the provision of individual attention. In the case of classes with 36–40 students, however, 40.7% of the teachers expressed the opinion "just about right" (as opposed to the 50.5% who responded "too large"), so that in general it can be tentatively concluded that large size is a serious problem with classes of 41–45 students.

But the question still remains as to whether all classes of less than 36 students are appropriate in terms of teachability and the provision of individual attention. From the results here, it appears that this is not necessarily the case for all smaller class sizes. Since the problem of classes being "too small" is relevant in this regard, we inspected the results to determine whether there was a class size which was considered to be too small.

As can be seen from Table I-4, there was a strong tendency for "too small" responses to occur in the case of classes with less than 20 students. Of the teachers with such classes, 41.1% expressed this opinion. This indicates that, although it is increasingly easier to detect individual characteristics and background differences among students and to provide individual attention as class size decreases, there is a level below which teaching becomes difficult due to problems in the promotion of social abilities and in the arousal of learning desire through the agency of competition.

Taking the general trend concerning the two polar sizes of "too large" and "too small" as extremes and on this basis determining the generally desired class size in terms of the present results, it can be said that, all other educational factors being equal, the ideal size falls between 21 and 40 students. Fig. I-2 shows a graphic representation of the percentage of teachers for each class size who, on the basis of their everyday classroom experience, considered that class size to be "just about right." From these results, it can be seen that the desirable, "just about right" class size includes the 21–25, 26–30, 31–35, and 36–40 student classes.

2. Opinions of Junior High School Teachers

It can be said that the general trend of results for junior high school teachers was the same as that for elementary school teachers. If a characteristic distinguishing the responses of junior high school teachers from those of elementary school teachers is sought, it is perhaps related to the fact that the peak of "just about right" responses occurs at the 26–30 student class size in the case of elementary school teachers, while in the case of junior high school teachers it occurs one level lower, i.e., at the 21–25 student size. This shift can be considered to be due to the fact that, compared to elementary school students, junior high school students show a wider range of individual differences, so that greater accuracy in the understanding of individual differences in ability and aptitude is necessary in order to provide appropriate instruction, thus mak-

ing it more difficult to provide individual attention. (See Table I-5).

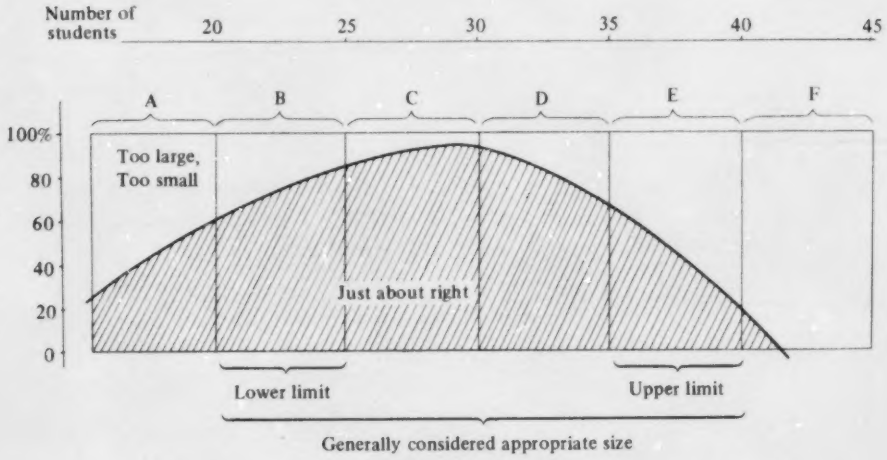

Fig. I-2. Class Size

Table I-5. Class Size (Junior High School)

( ) Actual figures

Opinion / Students per Class	No Response	Too Large	Just About Right	Too Small	Irrelevant Response	Total
No Response	84.7%	7.6	6.9		0.7	100.0%
Under 20		4.6	73.5	21.9		100.0
21–25		3.6	89.2	6.0	1.2	100.0
26–30		8.1	88.9	3.0		100.0
31–35	0.7	18.2	80.8	0.3		100.0
36–40	0.2	51.4	48.3	0.2		100.0
41–45	0.4	73.7	25.9			100.0
Irrelevant Response	5.0	40.0	5.0		50.0	100.0
Total	6.8	40.1	50.2	2.3	0.6	100.0 (1,884)

IV. Opinions Concerning the Present Approach to Student Promotion

Under the present system, in which grades and classes are in every case formed on the basis of student age level, students are promoted to the next grade at the end of each school year. That is, the promotion policy is that, unless there is some special reason, all students are considered to have completed the relevant educational program by the end of the school year and are all promoted to the next grade. In this investigation, teachers were asked what they thought of this perfunctory approach to promotion. In particular, they were asked what they thought of the idea of providing for more flexibility in promotion so that the ability and aptitude of children could be considered in the promotion of students, that is, for example, by allowing for grade skipping and retention in the same grade in order to ensure the adequate acquisition and development of basic knowledge and abilities. Here, however, it is to be stressed that our purpose is not to advocate "grade skipping" and "failing," but rather to clarify the thinking of teachers concerning ways of dealing with special, problematical cases in meeting the needs of particular students.

1. Thinking Concerning "Grade Skipping" and "Failing"

"Grade skipping" is a method of promotion in which students who show especially fast progress are advanced two or more grades ahead instead of being forced to stagnate at a lower level. Since there has recently been discussion of the adoption of this approach, we asked the respondents to indicate their attitude toward this approach to promotion. The results are shown in Table I-6.

Table I-6. Opinions Concerning Grade Skipping

( ) Actual Figures

	No Response	Support	Oppose	I don't know.	Irrelevant Response	Total
Elementary School	0.5%	19.3	63.7	16.4	0.1	100.0% (1,591)
Junior High School	0.6	21.2	60.6	17.1	0.5	100.0 (1,884)
Teacher Consultant	0.6	33.0	48.2	18.0	0.1	100.0 (2,361)
Researchers I	0.1	36.4	43.7	19.7	0.1	100.0 (1,032)
Researchers II	0.3	30.7	46.4	22.5		100.0 (306)

Approval of "grade skipping" was expressed by 19.3% of elementary school teach-

ers and 21.1% of junior high school teachers, and disapproval was voiced by 63.7% of elementary school teachers and 60.6% of junior high school teachers. It must therefore be concluded that, as the overall trend, support for "grade skipping" is low. However, when the responses of teachers concerning level of understanding of subject matter and the advances and disadvantages of presenting subject matter to all students according to the same time schedule are considered (see below), it can be said that there could well have been a higher rate of approval and support for "grade skipping." The present results seem to reflect the existence of a fairly large number of respondents who, not being familiar with the nature of "grade skipping" and its implementation, jumped to the conclusion that it would result in discrimination and educational inequality. If this is actually the case, there is a serious problem in the existence of teachers with such a mistaken way of thinking.

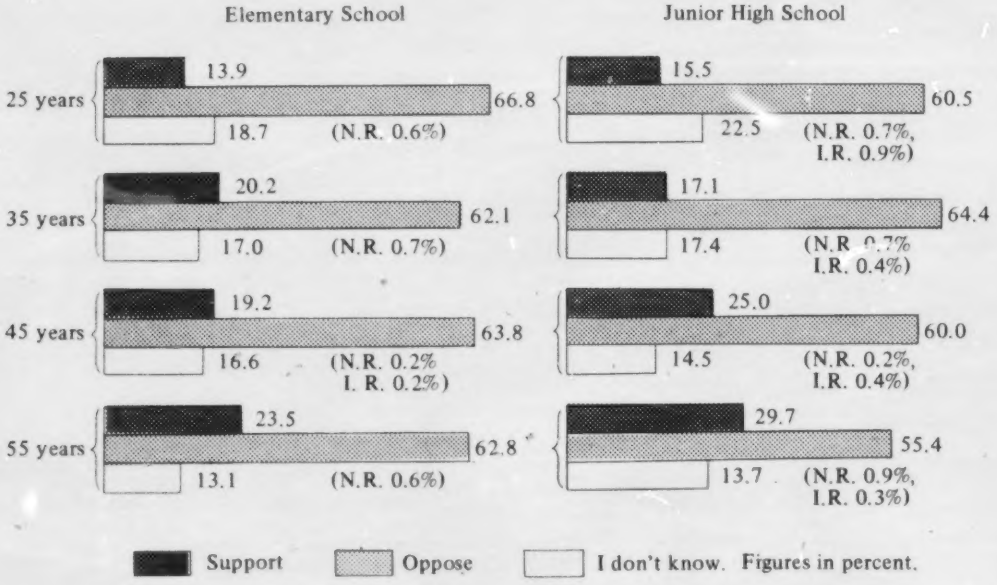

Fig. I-3. Opinions on Grade Skipping According to Age of Respondent

Fig. I-3 shows these results tabulated according to the age of the respondents. As can be seen from this graph, interest in the adoption of "grade skipping" was highest among 55 year old respondents and lowest among 25 year old respondents, indicating that support increases with age. This can perhaps be interpreted as being the result

of the fact that older, more experienced teachers realize more fully the difficulty of providing individual attention and have to some extent given up hope of being able to do so, and awareness of this was stronger than their attachment to the present approach to promotion when they responded to this question.

In order to clarify the reason for support for the adoption of "grade skipping," respondents indicating support were asked to check one of the following three choices:

1. Because it will make it more possible to draw out student abilities and develop them.
2. Because it will make it more possible to stimulate other (non-skipping) students and encourage them to greater effort.
3. Other ( )

As Fig. I-4 shows, the most common response here was choice (1) "drawing out student abilities and developing them," which was selected far more frequently than the other two. This trend was especially strong in the case of instruction supervisors and researchers.

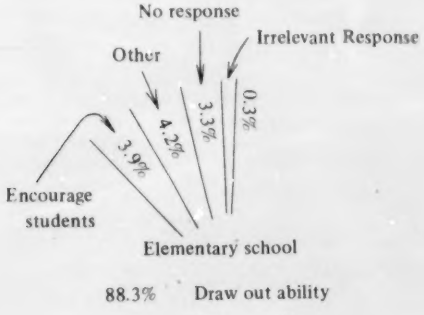

Fig. I-4. Reason for Support of Grade Skipping (Elementary School)

Assuming that a promotion policy allowing "grade skipping" were to be adopted, the question of when it should be applicable, i.e., from what grade level, arises. Teachers supporting 'grade skipping" were therefore asked their opinion on this matter, and the results are shown in Table I-7.

As can be seen here, there was a wide range of opinions expressed, but on the whole it can be said that opinion centers on the upper grade level of elementary school (i.e., 5th and 6th grade).

In addition, teachers opposed to "grade skipping" were asked to indicate their reason for this by choosing one of the following:

1. Because individual attention alone is sufficient.
2. Because "grade skipping" will make other students feel inferior.

3. Because it will result in cramming.
4. Other ( )

Table I-7. Time for Introduction of Grade Skipping

( ) Actual Figures

	No Response	Grades 1, 2	Grades 3, 4	Grades 5, 6	Jr. High	Sr. High	I.R	Total
Elementary School	6.5%	15.0	26.4	30.3	13.7	13.4	0.7	100.0% (307)
Junior High School	1.0	10.3	15.3	32.3	21.8	18.5	1.3	100.0 (400)
Teacher Consultant	0.5	6.0	19.4	34.1	24.0	15.4	0.5	100.0 (779)
Researchers I	0.3	12.0	17.6	32.7	25.3	13.0	0.3	100.0 (376)
Researchers II	2.1	4.3	26.6	36.2	23.4	7.4		100.0 (94)

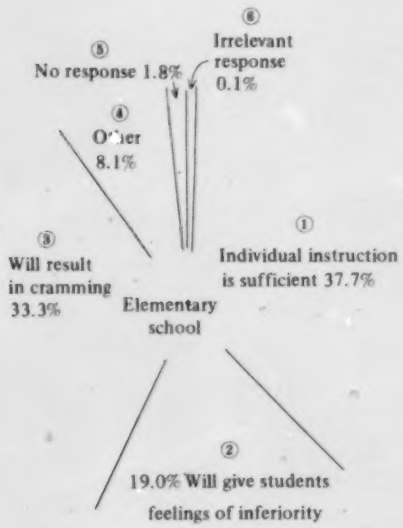

Fig. I-5. Reasons for Opposing Grade Skipping (Elementary School)

Here, as Fig. I-5 shows, choice (1) "individual instruction is sufficient" was selected most frequently, followed by choice (3) "it will result in cramming." It was

expected that choice (2) "it will make other students feel inferior" would be selected most frequently as the reason for opposing "grade skipping," but this was not the case and relatively few teachers selected this choice.

In any case, the distribution of responses concerning the reason for opposition clearly shows that many teachers, while opposing "grade skipping," feel that providing individual attention is both important and possible.

Next, opinions concerning the adoption of "failing" (i.e., retention in the same grade) were investigated. "Failing" of students is used in order to give so-called late-bloomers, who are unable to use their abilities sufficiently, a chance to restudy the same content and master the essentials by repeating the same grade instead of advancing to the next grade. In other words, "failing" is a drastic method used in caring for the needs of individual students. The respondents were asked whether they supported or opposed "failing" in an attempt to clarify their thinking on this matter. The results are shown in Table I-8.

Table I-8. Opinions Concerning Failing

( ) Actual Figures

	No Response	Support	Oppose	I don t know.	Irrelevant Response	Total
Elementary School	0.6%	11.0	75.9	12.3	0.2	100.0% (1,591)
Junior High School	0.5	17.1	69.9	12.3	0.3	100.0 (1,884)
Teacher Consultant	0.7	17.2	70.6	11.4	0.1	100.0 (2,361)
Researchers I	0.4	22.6	61.3	15.6	0.1	100.0 (1,032)
Researchers II		17.0	69.0	14.1		100.0 (306)

Compared to support for "grade skipping," support for "failing" is low. This is true not only in the case of teachers, but also in the case of teacher consultants and researchers. There were also a rather large number of "I don't know" (neither support nor opposal) responses, but it was impossible to determine the reason(s) for their selection of this response.

In order to determine the reasons for support for "failing," those indicating support were asked to check one of the following choices:

1. Because it makes it possible to give students a chance to restudy and increase their mastery of subject matter, thus increasing their desire to learn.
2. Because the retention of students in the same grade will eliminate students

who have fallen behind because of inability to keep up with the pace of instruction.

3. Other ( )

Here the vast majority of responses were concentrated in an evenly divided way on choices (1) "increasing desire to learn" and (2) "eliminating students who have fallen behind." It can be said that in both cases the respondents indicated a desire to eliminate the unfortunate phenomenon in which students who fall behind are labelled losers and treated as such for the rest of their lives.

Here again, assuming that a promotion policy allowing "failing" were to be adopted, the question of when it should be applicable arises. Teachers supporting "failing" were therefore asked their opinions on this matter, and the results are shown in Table I-9.

Table I-9. Time for Introduction of Failing

( ) Actual Figures

	No Response	Grades 1, 2	Grades 3, 4	Grades 5, 6	Jr. High	Sr. High	I.R.	Total
Elementary School	1.7%	22.9	33.1	9.7	12.6	19.4	0.6	100.0% (175)
Junior High School	1.5	13.0	18.0	15.2	22.3	29.1	0.9	100.0 (323)
Teacher Consultant	0.7	13.1	14.3	9.6	22.2	41.5	1.0	100.0 (405)
Researchers I	2.6	7.7	17.2	15.0	26.2	31.3		100.0 (233)
Researchers II	1.9	15.4	13.5	19.2	26.9	21.2	1.9	100.0 (52)

As can be seen from this table, the largest number of elementary school teacher responses were for the middle years of elementary school (i.e., the 3rd and 4th grade level), but the largest number of responses from junior high school teachers, teacher consultant, and researchers were for the high school level.

2. Toward Individual Instruction

Under the present Japanese system, there are rather many children who have ability but the emergence of that ability occurs at a time later than that of most children. Due to such influences as the family situation and other environmental factors, these children suffer not from lack of ability per se, but rather from their having fallen behind due to its late appearance. Therefore, under the present system, in which children are mass promoted in accordance with age regardless of other considerations,

these children are doomed to being left behind and treated as "guests". On the other hand, those who have superior ability would seem to benefit from this system, but in reality they are being forced to proceed at a level below their ability and aptitude, or are in essence being held back.

It is thought that these types of unfair, discriminatory treatment can be eliminated by a system which allows "grade skipping" and "failing." Those supporting such a system are small in number, but they do exist. This situation seems to indicate that, although change in the system itself is not given verbal support, there is a strongly felt need and desire to thoroughly meet the needs of each child by means of instructional action.

V. General Conclusions

In regard to the present system of uniform April enrollment, there are increasing numbers of those who feel the need to give more careful, detailed consideration to the development level of children. This is particularly true among younger teachers, who show a more flexible way of thinking and more often maintain the opinion that the enrollment policy should also be reconsidered in order to ensure that adequate individual instruction can be provided according to individual differences, which is necessary because of the fact that great differences in level of development are common at lower ages.

On the whole, however, there appears to be little or no desire for system changes, even though the importance of individual instruction is recognized. In particular, in the case of older respondents, there is little sign of such flexibility in thinking and strong attachment to the present system exists.

In regard to "grade skipping" and "failing," there were few responses in support of such policies. In the case of support, the reasons for such support stressed "drawing out ability" and "stimulating learning desire," thus indicating that the educational need for such action was felt by those supporting it. At the same time, however, there were those who feared that it would result in feelings of inferiority and thus felt difficulty in proceeding in such a direction.

CHAPTER II Educational Content and Methodology in the 6-3 System

I. Content Understanding and Learning Progress of Children

1. Degree of Understanding of Content

Here we will attempt to determine the direction for improvements in the conditions governing education in the 6-3 system by clarifying the points for improvement in educational content and methodology in this system, and also by considering the causes of the various problems involved. For these purposes, we centered part of our investigation on the degree to which students obtain an understanding of subject matter, because it is necessary to adjust as far as possible the curriculum content and pace of teaching to the degree of understanding of the learners. However, the degree of student understanding was not determined directly by investigating the children themselves, but rather by questioning their teachers concerning their diagnosis of the degree to which the students understand the content which is presented in daily class instruction activities according to their pre-prepared instructional plan.

We therefore attempted in this way to clarify teacher awareness and evaluations concerning the degree to which their students gain an understanding of subject matter. In the case of elementary school teachers, no attempt to separate the various subjects, but rather the teacher in charge of each class was asked to indicate the overall degree of understanding of the main subjects of study. In the case of junior high school teachers, however, responses were obtained from the teachers in charge of each subject of study.

Q1 At present, the subject matter for compulsory education in Japan is indicated for each grade in the Course of Study prepared by the Ministry of Education, and as a general principle this content is to be studied and learned by all students. Under this system, what ratio of students actually obtain a general understanding of this subject matter?

1. More than 3/4
2. About 1/2
3. About 1/3
4. About 1/4
5. I don't know.

The results for this question are shown in Table II-1. It can be said that these results deserve as detailed an analysis as possible. First, in the case of elementary school. 28.9% of the teachers responded that "about 1/2" of their students understood all of the material. And 14.0% responded that "about 1/3" of their students understood the material.

Here there appear to be several problems which must be analyzed. One is the general trend in the amount of understanding achieved by the students. On the whole, half of the teachers feel that "about 1/2" of the students understand the material to

Table II-1. Degree of Understanding of Subject Matter

( ) Actual Figures

	No Response	About 3/4 of Students	About 1/2 of Students	About 1/3 of Students	Under 1/4 of Students	I don't know.	Irrelevant Response	Total
Elementary School	1.1%	28.9	49.2	14.0	2.2	4.5	0.1	100.0% (1,591)
Junior High School	1.1	16.7	50.2	26.1	4.1	1.8	0.1	100.0 (1,884)
Teacher Consultant	1.4	29.9	50.5	10.8	0.7	6.6	0.1	100.0 (2,361)
Researchers I	1.4	20.1	50.0	12.8	1.5	14.2	0.1	100.0 (1,032)
Researchers II	2.0	20.6	43.8	20.9	3.3	9.5		100.0 (306)

be learned, while those feeling that the number is more ("about 3/4") or less ("about 1/3") are much fewer, i.e., about 30% and 15%, respectively. These are the results in terms of the response alternatives provided in the questionnaire, but it is problematical that, although the response "about 1/2" was chosen most frequently, the response "about 3/4" was chosen by a rather large number of the teachers.

It is further necessary to consider the conditions which led teachers to respond "about 3/4" or "about 1/2" instead of the amount which they aimed for, i.e., 100%. The questionnaire did not ask the respondents to give their reasons for their choice here, but it can be assumed that a wide variety of factors are intricately involved. From the standpoint of the normal instructional process, in which the teacher makes an instructional plan, designates materials to be given to the children, and carries out a variety of learning activities intended to result in the formation of understanding, it is necessary for the teacher to have a plan which is based on instructional content suited to the students, allows for thorough-going instruction, and includes effective devices designed to stimulate active learning by each student. In addition, there is the factor of the adequacy of materials, equipment, and facilities, as well as the basic factor of school size (i.e., number of students). A number of questions concerning these things were included in the present questionnaire, and they will be dealt with later.

Next, the results for junior high school show that 16.7% of the teachers responded that "about 3/4" of their students understand all of the material, 50.2% responded that "about 1/2" of their students do so, 26.1% that "about 1/3" do so, and 4.1% that "less than 1/4" do so. Comparing these results with those for elementary school, the number of teachers responding "about 3/4" is approximately 12% lower and the

number responding "about 1/3" is approximately 12% higher in the case of junior high school, reflecting the fact that the subject matter is more difficult on the junior high school level. If the "about 3/4" and "about 1/2" responses are combined, the total frequency for elementary school is 78.1%, while it is only 66.9% for junior high school. Here again, the degree of understanding attained by junior high school students is lower than that attained by elementary school students.

In the case of junior high school, there may well be a great difference in the degree of understanding attained in the various subjects taught, so that it is necessary to analyze the results from this standpoint. Table II-2 shows the results tabulated by subject.

Table II-2. Degree of Understanding of Subject Matter (Junior High, by Subject)

( ) Actual Figures

Subject	No Response	About 3/4 of Students	About 1/2 of Students	About 1/3 of Students	Under 1/4 of Students	I don't know.	Irrelevant Response	Total
No Response	10.2%	16.2	45.9	23.5	3.1	1.0		100.0%
Japanese and Sociology	0.2	16.4	51.2	27.3	3.4	1.7		100.0
Arithmetic and Science		15.4	53.8	26.2	3.6	0.9		100.0
Music and Art	2.2	21.3	40.4	25.0	6.6	4.4		100.0
Physical Education and Hygiene		17.8	45.0	30.2	4.7	2.3		100.0
Industrial Arts and Home Economics	0.6	21.9	54.8	18.7	1.9	1.9		100.0
Foreign Language	0.5	13.3	51.7	28.9	4.3	0.9	0.5	100.0
Other	1.7	16.5	47.5	25.0	6.4	3.0		100.0
Total	1.1	16.7	50.2	26.1	4.1	1.8	0.1	100.0 (1,884)

Examining these results in terms of the relation between the overall trend and the responses for each subject, it can be seen that for such subjects as Music/Art and Industrial Arts/Home Economics the percentage of "about 3/4" responses is higher and that of "about 1/3" responses is lower, but in the case of other subjects there are no great differences in the pattern of responses, which is very similar to the overall trend.

On the basis of these results, it can be said that, as in the case of elementary

school teachers, various objective and subjective factors influenced the junior high school teachers when they went through the process of judging the degree of understanding attained by the students in each subject. In the case of junior high school, however, there is the additional factor of content difficulty related to the fact that it is necessary for the students to attain an understanding of much more systematic content in each subject.

The above results are based not on a direct investigation of student achievement, but only on the opinion of a large number of teachers. Therefore, in regard to the problems raised by the opinions of these teachers, it is necessary to further confirm the actuel situation concerning the instructional content and methodology in each type of school and subject in order to satisfactorily clarify the needs for reform.

2. Entire Class-adapted Instruction as a Method of Teaching

Teachers use various approaches to teaching/learning, including entire class-adapted instruction, group learning, and individual instruction. In each case, there is the problem of the techniques and methodology to be used, but of even more basic importance is the problem that there are great differences from student to student in attitude, basic experience, and interest in the subject matter and materials. It can be said that the essential purpose of instructional methodology is to provide content programing and the attainment of thorough understanding on the basis of differences in individual needs and progress. But, up to the present, instruction has been carried out according to a policy of presenting the same material to and achieving the same degree of progress from all students in the class. Thus, in this respect it can be said that, while recognizing individual differences in degree of understanding, teachers have been conducting entire class-adapted instruction.

Recently, in regard to the improvement of teaching/learning methods, there has been increasing emphasis on the need to give greater attention to individual instruction. In the light of claims concerning the need for this type of improvement in teaching/learning methodology, teachers directly involved in instructional activities were asked what they thought of entire class-adapted instruction.

Q2 At present, school teaching normally follows the method of entire class-adapted instruction, in which the subject matter is presented simultaneously and at the same rate to all students in the class. What do you think of this approach?

1. Since learning takes place according to the conditions peculiar to each student, and since individual differences in ability and needs can not be adequately taken into account in entire class-adapted instruction, such an approach creates barriers to individual growth.

2. If the subject matter designated in the Course of Study is to be taught to all children in each class, then this approach is unavoidable. Furthermore, since the valuable trait of helping others is brought out by this approach, it is desirable to continue

using it.

3. Other ( )

The responses to this question are shown in Table II-3. Among elementary school

Table II-3. Opinions Concerning Entire Class-adapted Instruction

( ) Actual Figures

	No Response	Can't deal with individual differences	Group Learning Valuable	Other	I.R.	Total
Elementary School	1.8%	33.8	56.3	8.2		100.0% (1,591)
Junior High School	1.6	37.0	51.6	9.6	0.3	100.0 (1,884)
Teacher Consultant	1.1	44.8	42.6	11.4		100.0 (2,361)
Researchers I	0.8	55.1	32.5	11.6		100.0 (1,032)
Researchers II	0.3	54.1	35.6	10.1		100.0 (306)

teachers, 56.3% placed emphasis on the advantages of class-group learning, while 33.8% placed emphasis on the difficulty of dealing with individual differences. Thus more than half support this approach, although one third are of the opinion that the exclusive use of this approach makes it impossible to adequately take into account individual differences. Looking at these results more closely, it can be concluded that the majority of these teachers wish to place great weight on the value of class-group learning, especially in regard to human relations among students, but at the same time there is significant realization of the dilemma it presents, in that thoroughgoing instruction can not be achieved unless individual differences are adequately dealt with.

In the case of junior high school teachers, 51.6% stress the advantages of class-group learning, and 37.0% feel that this approach to instruction makes it difficult to take individual differences into account. It can be considered that these results reflect the fact that at the junior high school level differences in student ability and interest are greater than at the elementary school level. This means that the problem is not one of choosing between entire class-adapted instruction and individual instruction, but rather of responding to the need for the use of a variety of specific techniques. In this sense, placing stress on the difficulty of dealing with individual differences means that it is necessary to respond to the need to overcome this difficulty in some way. The same necessity exists in the case of each grade level in elementary schools, as Table II-4 shows. Here it can also be seen that as the level of learning goes up there is an increase, in the percentage of responses stressing difficulty in dealing with indi-

vidual differences.

Table II-4. Opinions Concerning Entire Class-adapted Instruction by Grade Level (Elementary School)

( ) Actual Figures

Grade	No Response	Can't deal with individual differences	Group Learning Valuable	Other	Total
No Response	3.3%	29.4	60.6	6.7	100.0%
1	1.1	26.3	66.9	5.7	100.0
2	3.0	30.7	54.8	11.6	100.0
3	0.5	36.6	53.1	9.8	100.0
4	1.8	42.8	46.4	9.0	100.0
5	0.5	34.9	52.9	11.6	100.0
6		41.8	53.5	4.7	100.0
I.R.		38.8	53.1	8.2	100.0
Total	1.8	33.8	56.3	8.1	100.0 (1,591)

II. Necessity of Individual Instruction and Difficulties in Providing It

1. Necessity of Individual Instruction

As we have seen in the case of opinions concerning entire class-adapted instruction, there are rather many teachers who think that, in view of the fact that the rate of learning varies considerably from student to student, individual instruction should be included in the methods used in education. It should not be necessary to state anew that this is a basic educational necessity, but it can be pointed out here that there are two possible approaches which can be followed in order to provide for the diversification of instructional methods and the compiling of curricula which are adapted to individual differences. One approach involves making changes in the promotion system and/or in the present grade system itself. The other approach involves the creation of individual learning programs and the use of teaching machines which allow students to proceed at their own pace.

In regard to the promotion system, the respondents were asked whether they supported or opposed "grade skipping." According to the results for this question, 19.3% of elementary school teachers supported "grade skipping," which 67.3% opposed it. In the case of junior high school teachers, 21.2% supported it and 60.6% opposed it.

At both levels of education, 16–17% of the teachers responded "I don't know." However, when the respondents were asked the reason for their opposition to "grade skipping," the most common response was that "individual instruction is sufficient," given by 37.7% of elementary and 33.8% of junior high school teachers. This seems to justify the statement that the need for individual instruction is strongly felt at present in teaching/learning activities.

The following question concerns the necessity of adopting a non-grade system:

Q3 There is at present a strong demand related to the need for individual instruction. If this demand is fully responded to, it will lead to the idea of a gradeless system in which learning groups are formed on the basis of rate and degree of progress. What do you think of this approach?

1. It is desirable from the standpoint of providing instruction according to individual student abilities and improving those abilities.
2. It is not desirable from the standpoint of the personal development possible in learning groups composed of students of the same age.
3. Other ( )

As the results in Table II-5 show, in the case of elementary school teachers, 22.6% consider adoption of a non-grade system desirable and 69.2% consider it undesirable, while in the case of junior high school teachers, 23.8% consider it desirable and 68.6% consider it undesirable. Here we see essentially the same trend as in the case of opinions concerning "grade skipping," the only significant difference being that 16–17% responded "I don't know" in the case of "grade skipping," while only about 6% responded here with some other opinion. The percentage of those who feel that adoption of a non-grade system is undesirable is very high, but the fact that more than 20% of

Table II-5. Opinions Concerning the Gradeless System

( ) Actual Figures

	No Response	Desirable	Not Desirable	Other	I.R.	Total
Elementary School	1.9%	22.6	69.2	6.2	0.1	100.0% (1,591)
Junior High School	1.1	23.8	68.6	6.6		100.0 (1,884)
Teacher Consultant	1.1	33.2	56.3	9.3	0.1	100.0 (2,361)
Researchers I	0.4	41.7	45.9	11.9	0.1	100.0 (1,032)
Researchers II	0.3	45.8	41.8	11.8	0.3	100.0 (306)

all the respondents consider it desirable justifies the conclusion that teachers are coming to feel an increasingly strong need for individual instruction.

2. Difficulties in Providing Individual Instruction

Even though the necessity of individual instruction is realized, a wide variety of conditions must be met in order to support action toward the actual provision of such instruction, which means that it is necessary to consider these prerequisites as they relate to the implementation of individual instruction in schools. It is therefore necessary to determine at the outset the difficulties which teachers feel they must overcome in order to proceed with the actual implementation of individual instruction in the classroom. The following question concerns this matter.

Q4 Many are of the opinion that various conditions make it difficult to implement individual instruction. What is the most difficult problem you face in this regard?

1. It is difficult to carry out individual instruction because the number of students per class is too large.
2. There is little or no time and opportunity for teachers to gain the methodological skills necessary for the provision of such instruction.
3. From the standpoint of the composition of educational personnel, there is a lack of manpower.
4. Such instruction is almost impossible because of difficulties in the preparation of individual learning programs.
5. Such instruction can not be easily provided because of a lack of appropriate equipment and facilities.
6. Other ( )

The results for this question are shown in Table II-6.

Table II-6. Difficulties in Providing Individual Instruction

( ) Actual Figures

	No Response	Classes Too Large	Lack of Methods	Lack of Personnel	Program Design Difficult	Lack of Facilities	I.R.	Total
Elementary School	2.9%	27.2	15.7	26.0	16.6	8.4	0.1	100.0% (1,591)
Junior High School	2.4	33.5	12.1	27.4	10.9	10.6		100.0 (1,884)
Teacher Consultant	3.0	33.2	15.2	17.5	19.5	9.2		100.0 (2,361)
Researchers I	1.5	34.9	14.5	17.4	19.0	9.9	0.1	100.0 (1,032)
Researchers II	1.3	29.7	13.1	16.3	15.4	15.0		100.0 (306)

Examining these results concerning the difficulties involved in implementing individual instruction, 27.2% of elementary school teachers checked response (1) "the number of students per class is too large," and this was the most frequent response from these teachers. In regard to the problem of class size, a previous question asked for opinions concerning the appropriate number of students for the classes the teachers are presently in charge of. According to those results, classes of 30–40 students were considered too large by 50.5% of the teachers, and classes of 41–45 were considered too large by 87.8% of the teachers, indicating a sharp rise in difficulty at this level of size. The relationship between these results and difficulties faced in implementing individual instruction deserves further research and analysis in the future.

The next most common response from elementary school teachers was "the shortage of educational personnel," which is related to the problem of improvement of the organization of teaching activities, which will be discussed later. In this regard, it has been claimed that, in addition to classroom teachers, it is necessary to establish positions for such specialists as curriculum designers and audio-visual aids experts. Considering the problem of providing individual instruction in this light, it can be said that it is not enough to have, as at present, only classroom teachers and a few special subject teachers. On the other hand, if the size of classes is reduced somewhat, the standard number of teachers can be increased accordingly.

Another common response, "the lack of instructional methods," was selected by 15.7% of the teachers. This percentage is not especially high, but this is a serious problem because the adoption and implementation of individual instruction requires that the teacher have the necessary instructional skills and methods. In this sense, in order to provide individual instruction, the teacher must make daily efforts to study methods and acquire skills for such activities.

In relation to instructional methods for individual instruction, the problem of "difficulty in program designing" was checked by 16.6% of the teachers, which is somewhat more than the percentage for "lack of instructional methods." As in the case of the development of instructional methods, program design is an important responsibility of the teacher. Furthermore, program design and instructional methodology must be thought of as being closely related to each other. If the responses for these two reasons are combined, the total percentage of teachers indicating this area as a problem is 32.3%. From this, it is clear that program design and instructional methodology are serious problems constituting a barrier to the provision of individual instruction.

Of the elementary school teachers, 8.4% gave "lack of facilities and equipment" as the reason for difficulty in implementing individual instruction. This is a much smaller figure than was expected, but this does not mean that the lack of facilities and equipment can be disregarded as a problem. On the contrary, as is well known, this is an important factor in the implementation of individual instruction. It is necessary,

however, to determine more specifically what needs to be improved or provided in this respect, since there are many possible needs, including those of classroom space, equipment, machines, teaching aids, etc.

In the case of junior high school, the responses were essentially the same as those for elementary school, except for the fact that the number of teachers indicating class size as a problem, i.e., 33.5%, was considerably higher than in the case of elementary school teachers. Also, and perhaps a side-effect of the class size problem, "lack of educational personnel" was selected by 27.4% of the junior high school teachers, or more than in the case of the elementary school teachers.

III. Necessity of Improving the Organization of Teaching Activities and the Establishment of Positions for Specialists

1. Necessity of Improving the Organization of Teaching Activities

Recently, the necessity of providing for more teacher cooperation and the better use of teacher specialities has been felt and efforts have been made to introduce new ways of organizing teaching activities in place of the traditional one in which each teacher is assigned to one class and assumes full responsibility for it. In this investigation, therefore, we asked the respondents whether they supported or were opposed to the introduction of two of the new types of teaching activity organization, i.e., team teaching and subject specialization (elementary school).

A. Team Teaching

Q5 Recently, in place of the traditional method of organizing teaching activities, in which one teacher assumes full responsibility for the instruction in all subjects for one class, some schools have adopted a new method, team teaching, in which several teachers cooperate in providing instruction for each class. What do you think of the introduction of this new approach?

1. I approve of it.
2. I oppose it.
3. I don't know.

The results for this question are shown in Table II-7.

According to this table, 64.4% of elementary school teachers approve of team teaching, while 9.4% oppose it. In the case of junior high school teachers, the number in approval is 58.9%, or somewhat less than that for elementary school teachers. In any case, it can be said on the basis of these results that for both elementary and junior high school teachers there is a need to change the present fixed organization of teaching activities in favor of the more flexible team teaching approach. At the same time, however, 25.6% of the elementary and 31.7% of the junior high school teachers responded "I don't know." This uncertain response was chosen by an ex-

Table II-7. Opinions Concerning Introduction of Team Teaching by School Size

( ) Actual Figures

Number of Classes in School	Elementary School						Junior High School					
	No Response	Support	Oppose	Don't know	I.R.	Total	N.R.	Support	Oppose	Don't know	I.R.	Total
N.R.	21.7%	47.8	17.4	13.0		100.0	40.9	40.9	4.5	13.6		100.0
Under 6		62.5	11.6	25.9		100.0		58.0	7.6	34.0	0.4	100.0
7–12	1.0	69.9	6.9	22.2		100.0	0.4	59.4	7.4	32.0	0.8	100.0
13–17		64.7	11.5	23.8		100.0	0.3	56.9	10.8	32.0		100.0
18–23		63.9	9.0	27.0		100.0	0.8	59.8	5.6	32.9	0.8	100.0
Over 24	0.3	62.9	6.9	29.9		100.0		60.9	9.5	29.6		100.0
I.R.		100.0				100.0		100.0				100.0
Total	0.6	64.4	9.4	25.6		100.0 (1,591)	0.8	58.9	8.2	31.7	0.4	100.0 (1,884)

ceptionally large percentage of the teachers, and it is believed that the reason for this choice involves either the feeling of security associated with the present approach or feelings of anxiety concerning change and the introduction of a new method of organizing teaching activities.

The questionnaire also included an item concerning the reason for supporting the introduction of team teaching. Here the most frequent response was that it would allow the full use of teacher abilities and specialities – the response of 66% of elementary school teachers and 52% of junior high school teachers. These teachers are therefore in favor of team teaching because it will make it possible for them to deepen their interest in and study of a particular subject of their choice and then make full use of the results in their everyday teaching activities. It can thus be said that teachers desire a new approach to the organization of teaching activities because under the traditional approach used at present, and especially in elementary school, the teacher must teach a wide variety of subjects and therefore can not concentrate enough on the subject which they are most interested in and can handle most effectively.

B. Subject Specialization (Elementary School)

Q6 As a new way of organizing teaching activities in elementary school, some schools have introduced subject specialization for some subjects. What is your opinion concerning the introduction of this approach in your school?

1 I approve of it.
2. I oppose it.
3. I don't know.

The results for this question are shown in Table II-8.

Table II-8. Opinions Concerning Introduction of Subject Specialization in Grade School

( ) Actual Figures

	No Response	Support	Oppose	I don't know.	Total
Elementary School	0.5%	86.9	6.0	6.7	100.0% (1,591)
Teacher Consultant	2.5	87.3	6.1	6.6	100.0 (2,361)
Researchers I	4.3	86.3	3.4	6.0	100.0 (1,032)
Researchers II	2.3	88.2	3.6	5.9	100.0 (306)

Team teaching is an approach to teaching organization in which the particular abilities of individual teachers are put to full use, association and cooperation among teachers teaching the same grade are promoted, and association among students in that grade is increased as a result of membership in various different learning groups. In subject specialization, however, teachers are placed in charge of instruction for some subject according to their interests and specialization, and association and cooperation among teachers teaching the same subject are promoted. There two approaches to the organization of teaching activities are thus different in nature, but they are both new approaches which are based on division of responsibility and cooperation.

The results here concerning the introduction of subject specialization (in elementary schools) show that 86.9% of the elementary school teachers supported it, 6.0% opposed it, and 6.7% were non-commital. Thus the rate of approval of the introduction of subject specialization was very high, but there were also quite a few teachers who expressed uncertainty by responding "I don't know." The reasons for approval – i.e., that the students will then be able to receive more professional instruction (65.6%) and that teachers will be able to make full use of their individual abilities (29.2%) – show that teachers are concerned about coping with the recent trend toward increase in the level of subject content, and that they want at the same time to be able to use their abilities as fully as possible.

The above examination of the survey results concerning the necessity of improving the organization of teaching activities has revealed that teachers are greatly inter-

ested in and concerned about reform in this area. This is related to the fact that this interest and concern are being reflected in actual efforts to improve instructional activities at a rapidly increasing number of schools. At present, qualitative improvements in instruction are being sought, and the implementation of individual instruction is also being claimed as necessary. In this connection, it is considered desirable to ensure that improvements in the organization of teaching activities be carried out so that greater instructional quality can be attained.

IV. Problems Concerning the Reform of Methods of Making the Curriculum

1. Increasing the Breadth of Curriculum Content Areas and Making Provision for Student Choice of Subjects

Because the present method of making the curriculum is subject-centered, educational activities are confined to the instruction for various independent subjects from the beginning to the end of elementary school. However, there is the opinion that, in the lower grades, it would probably be better to eliminate the restrictions of this subject-centered approach, reorganize and unify the subject matter, and to some extent introduce broad, multi-dimensional content areas in place of the present narrow subjects. In the past, there was a time when attempts to do this were made in the middle and upper grades, so we also included these levels in the following question concerning the necessity of considering the formation of a curriculum composed of broader subject areas.

Q7 The present curriculum is essentially based on a subject-centered approach to content organization, so that the content is divided into the same subjects from the beginning of elementary school. But it is also possible to remove these narrow subject restrictions, unify the content to a greater extent, and organize it into a curriculum composed of broader content areas. What do you think of this approach?

1. In the lower grades of elementary school, subjects should be combined to form broader content areas.
2. From the middle grades of elementary school as well, subject-centered restrictions should be lifted and several subjects should be combined.
3. The present method of curriculum organization is preferable to such a method.
4. Other ( )

Table II-9 shows the results for this question.

According to these results, 50.6% of the elementary school teachers felt that a curriculum composed of broader content areas should be adopted from the lower grades of elementary school. Thus the opinion that the present organization of the educational process should be changed in favor of a curriculum based on broad content areas is very strong. However, the desire for such change is limited to the case of the lower grades of elementary school, with only 4% of the teachers supporting it

Table II-9. Opinions Concerning Broad Subject Area Curriculum

( ) Actual Figures

	N.R.	Use in Grades 1 and 2	Use from Grade 3 Upwards	Maintain Present System	Other	I.R.	Total
Elementary School	1.4%	50.6	4.0	42.0	1.8	0.1	100.0% (1,591)
Teacher Consultant	0.9	50.8	3.3	43.2	1.7	0.1	100.0 (2,361)
Researchers I	0.6	54.2	6.6	35.6	3.2		100.0 (1,032)
Researchers II		56.5	5.9	35.9	1.6		100.0 (306)

in the case of the higher grades. Furthermore, 42% feel that the present method of making curriculum should be maintained. This too is a rather high percentage.

In regard to making the curriculum in the lower grades, it is necessary to consider the relationship between elementary and pre-elementary education, as well as the level of development of the students. Thus the above results are most likely a reflection of the feeling that at the lower grade level it is necessary to adopt a broad content area curriculum that includes training for everyday living – i.e., that such a curriculum would be preferable to the present subject-centered curriculum.

Next, representing another viewpoint concerning the reform of making the curriculum, there is the opinion that, as in the case of junior high school, provision should be made in elementary school for student selection of subjects in some cases. And at the same time, there is also the opinion that the freedom of selection should be increased in junior high schools. In the present system, there is no freedom of subject selection for elementary school students, all of which must study the same subjects for the same number of class hours. We therefore asked the respondents whether they felt it was necessary to introduce alternatives for selection and in this way provide for a curriculum that is broader in scope.

Q8 At present, junior high school students are given some choice in subjects to study. What do you think of the idea of extending this limited freedom of selection to elementary school?

1. Depending on the subject, such freedom of selection can be introduced on the elementary school level as well.
2. It should be limited to junior high school, but there greater opportunity to select subjects should be provided.
3. The present system should be maintained as is.
4. Other ( )

The results for this question are shown in Table II-10.

Table II-10. Extension of Student Subject Selection System

( ) Actual Figures

	N.R.	From Elementary School	Increase Subject Selection from Jr. High School	Maintain Present System	Other	I.R.	Total
Elementary School	1.2%	4.3	31.0	60.2	3.1	0.1	100.0% (1,591)
Junior High School	0.6	6.6	35.8	49.2	7.2	0.5	100.0 (1,884)
Teacher Consultant	0.7	3.3	35.2	57.8	2.7		100.0 (2,361)
Researchers I	0.1	6.2	39.2	49.9	4.6		100.0 (1,032)
Researchers II	0.3	4.2	42.5	47.1	5.9		100.0 (306)

Here, only 4.3% of the elementary school teachers considered it necessary to extend the subject selection system to elementary school, while 60.2% felt that the present system should be maintained. In addition, 31% were of the opinion that the amount of freedom to select subjects for study in junior high school be increased. In other words, from the standpoint of elementary school education, it is considered that there is no necessity to introduce subject selection by students.

In the case of junior high school teachers, 6.6% are in favor of extending the freedom of subject selection to the elementary school level – a somewhat higher rate of support than in the case of elementary school teachers. In regard to giving junior high school students greater opportunity to select subjects, 35.8% of these teachers agree that this should be done. This is a rather high percentage. We therefore were interested in the results concerning the reason for supporting the extension of student freedom in subject selection. These results are shown in Table II-11.

As the reason for extending student freedom to select subjects for study, 82.2% of the elementary school teachers and 81.5% of the junior high school teachers selected "improvement of the aptitude of individual students." That is, each student has his own aptitude, and this aptitude becomes increasingly apparent as the student progresses upwards through successive grades. This is considered to be true at the elementary school level as well as at the junior high school level, so that it is necessary to consider student selection of subjects at both levels.

In addition, "satisfying the desires of individual students" was selected as the

Table II-11. Reason for Supporting Extension of Student Subject Selection System

( ) Actual Figures

	N.R.	Satisfy Individual Desires	Increase Individual Aptitude	Socially Valuable	Effective in Future Education Guidance	I.R.	Total
Elementary School	0.5%	10.0	82.2	2.1	5.0	0.2	100.0% (562)
Junior High School	2.0	7.9	81.5	3.1	4.6	0.9	100.0 (800)
Teacher Consultant	2.0	4.9	86.8	1.1	4.8	0.4	100.0 (910)
Researchers I	1.9	8.3	82.5	1.8	5.3	0.6	100.0 (469)
Researchers II	2.1	2.8	89.5	2.1	3.5		100.0 (143)

reason by 10.0% of elementary school teachers and 7.9% of junior high school teachers. This also reflects the fact that individual interests and concerns vary considerably, so that responding to this variety is in line with present-day educational demands. "Effective in aiding the provision of counseling concerning future education for students" is also a valid reason for increasing freedom to select subjects for study, but the teachers showed very little interest in this. The same was true to an even greater extent in the case of the reason "socially valuable."

Considering these results as a whole, it seems that teachers feel rather strongly the need for increasing student opportunity to select subjects for study, but when it comes to achieving this within the present organization of the educational process, which is filled with required subjects that take up almost all class time, these teachers are caught in a dilemma since they recognize the necessity of doing so, but at the same time can see no way of making it possible in the present school system.

2. Relationship between Elementary and Junior High School Instruction

We have considered the reform of educational content and methodology in terms of the problems at each level of education in order to determine the direction which such reform should take. Another important aspect of this reform, however, involves ensuring a close relation between the content and methodology of elementary and junior high school education, and taking effective steps in adjusting educational action to the development level of the students. In recent years, the rate of growth and development of children has increased, so that pre-adolescent developmental characteristics now appear at an earlier age than in the past.

The present 6-year elementary, 3-year junior high school education system was established in order to deal with differences in the nature and speed of growth and development in children, but it has become necessary to reconsider the entire 9-year educational process as a whole in the light of developmental considerations. Contrary to the previous problem of increasing student freedom in selecting subjects for study, which is a matter of the scope of the educational process, the present problem is a matter of educational sequencing. This problem of sequence concerns not only subject sequencing, but also student guidance.

In this regard, since it is claimed that pre-adolescent developmental characteristics now appear at the 5th and 6th grade level, we asked the respondents about methods of coping with this phenomenon in the provision of guidance.

Q9 It is said that the rate of growth and development of children has increased and pre-adolescent characteristics are now appearing at an earlier age, so that various problems in guidance have arisen, making it difficult to cope with this phenomenon. In terms of the present education system, when do you think it is necessary to begin to consciously provide this kind of guidance and counseling?

1. From 5th grade
2. From 6th grade
3. From junior high school

The results for this question are shown in Table II-12.

Table II-12. Time for Provision of Pre-adolescent Guidance

( ) Actual Figures

	N.R.	Grade 5	Grade 6	Jr. High School	I.R.	Total
Elementary School	1.7%	59.1	25.5	13.5	0.3	100.0% (1,591)
Junior High School	1.6	46.1	31.9	20.1	0.3	100.0 (1,884)
Teacher Consultant	1.2	49.9	31.8	17.2		100.0 (2,361)
Researchers I	1.5	49.3	30.0	19.2		100.0 (1,032)
Researchers II	1.3	56.5	23.2	19.0		100.0 (306)

As this table shows, the choice of "5th grade" as the time from which pre-adolsecent guidance and counseling should be consciously provided was indicated by a very high percentage of elementary and junior high school teachers, i.e., 59.1% and 46.1%, respectively. The next highest response rate was for "6th grade," chosen by

25.5% of elementary and 31.9% of junior high school teachers, and the rate for "junior high school" was 13.5% in the case of elementary school teachers and 20.1% for junior high school teachers. On the whole, therefore, opinion is strongest for the provision of such guidance and counseling from 5th grade, and becomes weaker as the grade level rises.

It is clear from the results of this investigation that it is no longer possible to maintain the present traditional system, in which child guidance is carried out during the six years of elementary school, followed by a switch to pre-adolescent guidance in junior high school. As was mentioned earlier, it is necessary to provide instruction and guidance according to the level of growth and development of the students in both elementary and junior high school. In addition, it is also considered necessary to provide junior high school education as a well-integrated continuation of elementary school education. In view of the above-mentioned changes in the growth and development rate of children, however, it has become necessary to introduce on the elementary school level the educational thinking and types of guidance that have been previously used only on the junior high school level, and at the same time it is necessary for junior high schools to fully understand these and future changes in elementary school education and on that basis adopt ways of promoting ego establishment and the full use of aptitude in junior high school students.

In the above, we have pointed out that it has become very necessary to seriously consider and improve the relationship between elementary and junior high school education. From the standpoint of dealing with pre-adolescent children, however, there is a serious problem in that education is divided into two distinct periods of six and three years, and is carried out in two different, independent places – i.e., elementary school and junior high school. If the present system is maintained, teachers at both elementary and junior high schools will be forced to find their own ways of coping with student needs, but it is also possible to reconsider the way in which the nine years of elementary and junior high school education are divided and to make changes in the system accordingly. As a problem for the future, therefore, we asked the respondents what they thought of the latter way of thinking in regard to this matter.

Q10 (For those who checked choice (1) or (2) in the previous question) In regard to the problem of coping with the needs for pre-adolescent guidance and counseling, what do you think of the present way of dividing compulsory education into two periods of six and three years?

1. Since it is possible to provide the necessary guidance and counseling within the present 6-3 system there is no need to change it.
2. Since this is a serious basic problem, it is necessary to change the present 6-3 system.
3. I don't know.

The results for this question are shown in Table II-13.

Table II-13. Necessity of Changing Division of 6-3 System

( ) Actual Figures

	N.R.	No need for Change	Need for Change	I don't know.	I.R.	Total
Elementary School	2.0%	64.0	19.3	14.2	0.4	100.0% (1,345)
Junior High School	1.2	53.0	32.2	13.6		100.0 (1,470)
Teacher Consultant	1.3	44.5	44.0	10.0	0.2	100.0 (1,935)
Researchers I	1.3	42.7	42.6	13.1	0.3	100.0 (819)
Researchers II	0.4	47.1	41.0	11.5		100.0 (244)

As can be seen from this table, the survey results indicate that 64% of the elementary school teachers oppose, and 19.3% support changing the present 6-3 system and introducting a different division of the educational process. Thus, elementary school teachers, who are thoroughly accustomed to the 6-year educational period, strongly feel that the present system should be maintained. As a result, they think that, even though the rate of growth and development of children has changed, the problems can be handled within the present system by making changes in educational content and methodology.

In the case of junior high school teachers, however, 53% oppose changing the system and 32.2% feel that change is necessary, a figure much higher than that for elementary school teachers. Compared to elementary school, the history of the present junior high school system is much shorter, and the teachers seem to be more flexible in their thinking, so that more recognize the need for change in the system. In addition, changes in the students during the three years of junior high school are not the only source of difficulty. There is also the difficulty coming from lack of spare time due to the demands associated with preparation for advancing to senior high school. Both of these difficulties seem to make it necessary to increase the length of junior high school education to some extent. The differences in the thinking of elementary and junior high school teachers thus reflect the differences in their situation and position in the educational process.

Changing the way of dividing the educational process and reforming the 6-3 system is a matter that will greatly affect the entire compulsory education system and therefore requires the utmost of careful consideration before any action is taken. Nevertheless, it is necessary to take such steps in the future, keeping in mind the

need to ensure a close relationship between the two levels of education, and not forgetting that there are many areas of uncertainty in regard to the development of school children.

General Conclusions

In regard to the reform of the present 6-3 system and the education being provided, the most significant factor is the problem of improving content and methodology. In present-day educational activities, it is demanded that the students be made to understand the subject matter being taught, and that the students be given ability to apply and increase their grasp of the subject matter on the basis of that understanding. The present investigation has made it plain that, for the above purposes, it is necessary to increase student learning desire and deepen their understanding of the content being taught in schools.

In this respect, various research projects have been carried out concerning such things as the clarification of learning objectives, improvement of instructional methodology, and the provision of materials and equipment for use in teaching/learning activities, but it is now necessary to increase efforts concerning the actual implementation of these things in the classroom on the basis of a firm grasp of the needs of the students. The fact that there is recognition of the need for instruction for each individual student is also a very important point to consider, and it is thus necessary to carry out research concerning ways of meeting this need. In foreign countries, research in individual instruction is being carried out actively, the development of programed learning and teaching machines has progressed to a high level, and research in and trials of gradeless systems have already been conducted with success.

Considering the results of this investigation as a whole, it is possible to entertain the idea that a gradeless system is rather desirable. But it is first necessary to solve the many problems standing in the way of the implementation of individual instruction — e.g., the problems of class size and the acquisition of skills in program construction by teachers. In addition, there are the problems for further research related to new ways of organizing the educational process, the selection of teaching materials, and the compilation of a broad subject area curriculum (especially for the lower grades of elementary school). Finally, in view of the fact that the growth rate of children has increased, it is necessary to reconsider the relationship between educational activities in elementary and junior high school.

On the basis of the overall results of this opinion survey, it can be said that efforts are already being made in the direction of reforming the organization of teaching activities, with the focus on the provision of both individual and group instruction. Since support for such efforts is strong, it is necessary to take advantage of this opportunity by making active efforts to reform educational content and methodology.

AESTHETIC EDUCATION IN JAPAN*

Shigeyasu NAKAMURA

Preamble

This report is composed of two parts: The Status of Aesthetic Education in Japan, and Creativity Development in and through Aesthetic Education in Japan. The first part, the Status of Aesthetic Education in Japan, is prepared on the basis of a questionnaire developed by the Unesco Secretariat. The second part, Creativity Development in Aesthetic Education in Japan, includes case studies of classroom practices. The study has been carried out by a working group organized in the National Institute for Educational Research of Japan. Mr. S. Nakamura, Head of the Section for External Relations of NIER served as chairman of the group. Mr. K. Saito, Principal of Sennan Lower Secondary School, Suginami-ku, Tokyo (former Chairman of the National Association of Teacher-Consultants on Aesthetic Education in Japan) has been invited to join the group as an expert member, and Mr. T. Kanaya, Research Co-ordinator of NIER, has assisted Mr. S. Nakamura. Following four experts have been invited to participate in the discussion and to submit study reports to the Working Group. They are:

Mr. S. Nezu, Senior Researcher of Arts Education, Tokyo Metropolitan Institute for Educational Research and In-service Training

Mr. T. Ichikawa, Specialist teacher, Hachiyama Lower Secondary School, Shibuya-ku, Tokyo

Mr. T. Kumada, Specialist teacher, Kubomachi Elementary School, Bunkyo-ku, Tokyo

Mr. S. Ohashi, Specialist teacher, Oyama Elementary School, Itabashi-ku, Tokyo

The report is a product of joint efforts of these members.

PART ONE: THE STATUS OF AESTHETIC EDUCATION IN JAPAN

Introduction: Definition of Aesthetic Education in School Curricula of Japan

In Japan children begin to go to kindergarten at the age of three. 6.6% of three year old children, 48.7% of four year old children, and 64.6% of five year old children

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attend kindergarten. Formal schooling starts at the age of six years. Nine years schooling, six years of elementary and three years of lower secondary, is compulsory for all and the attendance ratio is almost a hundred percent.

Branching of courses begins at the upper secondary level which lasts for three years. This is not compulsory, but 93% of lower secondary school leavers proceed to the upper secondary level. Two to four years of higher education is possible for those who finish upper secondary school.

Establishment of national education policies and its implementation at national level are at the hand of the Ministry of Education, Science and Culture (hereinafter referred to as Ministry of Education). National standards on teaching contents, school programmes, areas of teaching, time allotment, and other important items are being decided by the Ministry of Education. Administratively, Japan is divided into 47 prefectures and further into 3,000 municipalities. In each of prefectures and municipalities, a local board of education is formed which is an executive organ of educational undertakings of that region. Administration of compulsory education is the responsibility of municipal board of education, with the guidance and financial supports from both national government and prefectural board of education. There is no explicit system of supervision or inspection for school activities and school principal is responsible for every educational undertaking of the school while he can expect suggestions and advices from local boards of education.

Aesthetic education comprises various areas and subjects. At kindergarten level, it consists of 'Drawing' and 'Music and Rhythm'. Drawing includes formative activities such as drawing and handicrafts. 'Music and Rhythm' includes musical activities as well as rhythmic and body expressions. Body expressions in 'Music and Rhythm' can be treated as a basis for dance expression or as an integrated activity of music and rhythmic movement in physical exercises.

In elementary schools it consists of 'Music' and 'Arts and Handicrafts', and in lower secondary schools of 'Music' and 'Fine Arts'. Aesthetic education at the upper secondary school level consists of 'Music', 'Fine Arts', 'Industrial Arts' and 'Calligraphy'.

Time Allotment for Aesthetic Education

School education in Japan is conducted within the framework of the courses of study prescribed by the Japanese Ministry of Education. Aesthetic Education, as far as it is conducted within school, is treated in the same way as other subjects. The time allotment for aesthetic education at every level of schooling is given in the respective courses of study. In public elementary and lower secondary schools*, the time is allotted in the following way:

* 'Public school' refers to a school established and administered by local government.

Grade	No. of periods per week	No. of periods per year	Optional activities
Elementary School I 6 yrs	3	102	
II–III 7–8 yrs	2	70	
IV–VI 9–11 yrs	2	70	One period per week is set aside for club activities (35 periods per year) and there are several clubs for aesthetic activities such as drama, chorus, etc.
Lower Secondary School I–II 12–13 yrs	2	70	One period per week (35 periods per year) is set aside for club activities which include aesthetic activities. In addition, aesthetic extra-curricular activities such as drama, fine arts, music, etc. take place after school hours.
III 14 yrs	1	35	In some schools, two periods per week are allotted for aesthetic education.

Note: One period at elementary school is from 40 to 45 minutes and at lower secondary school from 45 to 50 minutes. The national standard with regard to the duration of one period is 45 minutes for elementary school and 50 minutes for lower secondary school, but since actual school programmes are organized in accordance with the conditions in the community and among parents, 80 to 90 percent of public schools set one period at 40 minutes (shorter than the national standard).

At upper secondary level, Fine Arts, Industrial Arts, Music and Calligraphy are provided for under the title of Arts. Students select, in accordance with their individual interests and ability, one area out of these four and it is subject to change from one year to another. One period at upper secondary school consists of 50 minutes and 35 periods spent learning one subject area leads to the acquisition of one credit. As one of the graduation qualifications from upper secondary school, students should possess at least three credits in Arts. Standards for the selection of credits to be acquired and the time allotment per grade vary from one school to another, but the standard distribution of credits to be acquired may be stated as follows:

There are some schools at upper secondary level in which arts courses (Fine Arts and Music) are provided. For the students of these courses there is another arrangement regarding the standard numbers of credits to be acquired: for example, for music theory three to nine credits, for history of music three to six credits, for fine arts theory three to nine credits, etc.

For kindergarten education there is no such course of study, but the Ministry of Education issues guidelines for kindergarten educational programmes. The guidelines

Grade	Subjects	Standard No. of credits	Optional activities
I – III 15 – 17 yrs	Music I – III	2 each	The period for club activities is incorporated in the school programme (one period per week), and many schools have various types of arts clubs.
	Fine arts I – III	2 each	
	Industrial Arts I – III	2 each	
	Calligraphy I – III	2 each	

state, for example, that the number of days of activities in one year should be more than 220 days and the number of hours of activities per day should be four hours, but there is no statement regarding the time to be allotted for aesthetic education in kindergarten. In practice, however, it is safe to generalize that in kindergartens in Japan one to two hours (60 to 120 minutes) a day are usually assigned to drawing, making handicrafts and rhythmic plays, that is, six hours a week on average. Of course there are kindergartens in which more than six hours a week are allotted to aesthetic activities.

Nature of Arts Subject at School (Compulsory or Optional)

Kindergarten education as such is not compulsory in Japan, but the guidelines for kindergarten educational programmes are regarded as a standard reference for the organization of programmes in kindergarten, which include two areas related to aesthetic education, that is, 'Music and Rhythm' and 'Drawing'. It can therefore be said that aesthetic education at kindergarten level is compulsory in Japan.

The course of study for elementary school prescribes the standards of subjects both for public and private elementary schools, in which 'Arts and Handicrafts' and 'Music' are designated as subjects to be taught at elementary school. Therefore aesthetic education at elementary level is compulsory.

It is also compulsory at lower secondary level. As shown in the preceding table, teaching of 'Fine Arts' is compulsory for two periods per week for grades one and two. In the third grade this becomes one period per week. In addition, there is a provision for the third grade to spend one period per week learning optional subjects and Arts is one of the subjects which can be selected for that period. In some schools in which Arts is selected for that purpose, pupils are obliged to take it for two periods a week.

For upper secondary school, the course of study prescribes that all students must study one subject area out of 'Music I', 'Fine Arts I', 'Industrial Arts I', and 'Calligraphy I'. It also defines that in Arts subjects the number of credits to be acquired by every one should not fall below three. In spite of this provision, some schools organ-

izes special programmes for the learning of Arts by which pupils can acquire two credits in an Arts subject for each grade. Therefore it can be said that at upper secondary school Arts subjects are taught as both elective and required subjects. There is no difference in number of credits in Arts subjects to be acquired by general or vocational courses, except for the Arts courses mentioned on page three.

Influence of Aesthetic Education on Personality Development

The Japanese people have their own traditional value system as well as a refined cultural heritage. They are a people who are enthusiastic in making cultural innovations without losing their traditions and their traditional value system. It may not be an over-estimate to say that all the people of Japan have a deep understanding of aesthetic education and appreciate the important roles to be played by the education of music and fine arts in the personality development of individual children.

The objectives of art education (as defined by the Ministry of Education) can be described in the following passage, which deals with the influence of art education on the personality development of children:

"In straightforward terms, the objectives of the study of fine arts are to enable children to feel directly the beauty of nature and of created articles and to develop the ability to express this beauty for themselves. At the same time the aim is to enhance a free, individualized comprehensive human activities, in other words, to develop the basic abilities and attitudes required for creative expression.

(Omitted)

The development of modern science and technology has brought about the fragmentation of human powers into individual units, each one of which has been separately deepened and enlarged. In general education, the amount of material which must be absorbed in order to comprehend human achievements in such widely divided areas has steadily increased. This means that the subjective consciousness of individuals is lessened and their awareness as human beings dries up, which in turn brings about hindrances to communication among men, in particular the communication of individual living feelings and sentiments. The isolation of individuals in society, even in social and educational activities, is becoming a very crucial problem. In such circumstances, art education, in which every pupil is required voluntarily to give direct and comprehensive expression to his experience of feelings and techniques, plays a fundamental role in the human development of children and adolescents (education from kindergarten to upper secondary levels).

Herbert Reed exerted a distinct influence on fine arts education in Japan and his work 'Education through Art' is often quoted by Japanese school teachers of arts subjects. Many art teachers understand that the essence of aesthetic education is edu-

cation through art as implied by the title of Reed's work.

Furthermore, the quantity of knowledge possessed by individual pupils and students is always increasing as a result of the development of audio-visual mass media such as television, and art education has its basis in the physical movements or experiences of children. As a consequence, art education is given much emphasis as a subject in which children are helped to expand their experience of life and to become positively involved with artistic materials and nature. In kindergarten education it is said that drawing is a window for a child's heart. Activities for the purpose of self-expression are means of stabilizing children's emotion. Music and drawing play vital roles in the development of the sentiments and aesthetic sense of children.

National Standards and Guidelines of Aesthetic Education

As mentioned earlier, the courses of study issued by the Ministry of Education represent basic national standards for school education, and there are several kind of guidelines and reference books which accompany the courses of study. Given below is a list of such documents arranged according to levels of administration.

National level

The Ministry of Education prescribes courses of study for every grade which are regarded as the legal standards for teaching contents and programmes. Arranged according to school levels, these are:

Guidelines for Kindergarten Education Programmes – Music, Rhythm, Drawing
Course of Study for Elementary Schools – Music, Arts and Handicrafts
Course of Study for Lower Secondary Schools – Music, Fine Arts
Course of Study for Upper Secondary Schools – Art

In addition, the Ministry of Education publishes guidebooks for teachers and administrators to explain in further detail the contents and methods of instruction of the basis of the respective courses of study.

Guidebook on Music, Rhythm and Drawing in Kindergartens
Guidebook for the Teaching of Music in Elementary Schools
Guidebook for the Teaching of Arts and Handicrafts in Elementary Schools
Guidebook for the Teaching of Music in Lower Secondary Schools
Guidebook for the Teaching of Fine Arts in Lower Secondary Schools
Guidebook for the Teaching of Music in Upper Secondary Schools

Furthermore, case study reports on instructional activities, such as 'Guidance for the Formation of Ideas', 'Instructions for Collective Production Work', 'Instructions for Designing', are published by the Ministry; these are also regarded as practical guidebooks for the instructional activities of teachers.

Textbooks are used by all pupils and students from elementary to upper secondary levels. There is a regulation to the effect that the textbooks used at school should

be those approved by the Ministry of Education, the criteria of which are defined by the Standards of Textbook Approval and Associated Regulations.

The courses of study are revised from time to time in accordance with changes in educational policies and social needs. Up to the present, revised courses of study have been issued almost every ten years. After the public announcement on the text of a newly revised course of study, three years are usually allowed for transition procedures, i.e. the full implementation of the revised course of study takes place three years after the Ministry of Education has issued the text. An official note for every level of school entitled 'Transition Measures for the Revised Course of Study and Instructional Guidance during the Transition Period' is issued by the Ministry.

Prefectural Level

The prefectural board of education issues the following documents on the basis of courses of study and other guidebooks published by the Ministry of Education. The titles of the publications given here are those used by the Tokyo Metropolitan Board of Education.

Guidelines for the Organization of School Programmes – Kindergarten, Elementary School, Lower Secondary School

Guidelines for the Organization of School Programmes – Art (Music, Fine Arts, etc.) in Upper Secondary Schools

Regarding transition measures from one course of study to another, the prefectural board of education issues a note on 'Transition Measures in respect of Courses of Study for Public Schools in Tokyo – Kindergarten, Elementary School, Lower Secondary School, Upper Secondary School'. The prefectural board of education also publishes various case study reports and materials for instructional activities which are utilized by school teachers as guidelines for day-to-day teaching activities. One of the most important reference materials for teachers published by the Tokyo Metropolitan Board of Education is:

Materials Concerned with Curriculum Modernization – For Public Schools in Tokyo –

Kindergarten

Elementary School (Music, Arts and Handicrafts)

Lower Secondary School (Music, Fine Arts)

Upper Secondary School (Music, Fine Art Calligraphy)

In addition, the School Education Department of the Tokyo Metropolitan Board of Education compiles every year a 'School Education Department Brochure' which contains guidelines for instructional activities for all levels of schools. This is a document designed to show the emphasis in terms of educational objectives for different subjects; the section concerned with Arts and Handicrafts in elementary schools is, for example, as follows:

a) (Omitted)

b) To grasp the real situation of children and the community; to select carefully the basic and essential points that should be taught so as to make children develop their formative abilities; and to improve teaching plans and teaching methods on the basis of the newly revised course of study.

c) (Omitted)

Municipal Level

Usually, the municipal board of education organizes a committee inviting leading teachers of the region in the field of aesthetic education. The functions of the committee are to develop various manuals for teachers and resource materials on the basis of prefectural guidelines. The manuals and materials thus developed are distributed to every teacher concerned in every public school of that region. Examples of titles of such manuals and materials are as follows:

A Draft Music Teaching Plan, compiled by the Draft Plan Development Committee of S Municipal Board of Education

A Draft Teaching Plan for Arts and Handicrafts and Fine Arts, compiled by the Draft Plan Development Committee of S Municipal Board of Education

Guidelines for Developing a Teaching Plan – Arts and Handicrafts, compiled by O Municipal Board of Education

Teachers' Manual for the Planning of Teaching Activities – Arts and Handicrafts, compiled by T Munucipal Board of Education

In addition, a 32 page textbook is distributed to every elementary school pupil and a 24 page book to every lower secondary school pupil, free of charge.

Objective of Aesthetic Education

The objectives of aesthetic education are officially defined in the courses of study prescribed by the Ministry of Education.

Kindergarten

The overall aim is given as:

The enrichment of creativity through free expression activities

In Music and Rhythm, children should learn:

1. To know the pleasure of expression through free singing or playing of musical instruments;
2. To know the pleasure of expression through the enjoyment of free rhythmical physical movements;
3. To develop an interest in listening to music and a sense of love of music;
4. To try to express by sound or physical movements what they feel or think.

In Drawing activities they should learn:

1. To enjoy expressive activities through drawing or making articles;
2. To express what they feel or think by means of their own ideas;
3. To become familiar with the use of various materials and tools;
4. To take an interest in beauty.

Elementary School

In Music teachers should try:

Through activities concerned with musical expression and appreciation to cultivate children's inclination for music; to help them develop a love of music; and to elevate their aesthetic sentiments.

In Arts and Handicrafts they should try:

Through activities concerned with expression and appreciation to cultivate in children the basis of formative creative activities; to make them aware of the pleasure of expression; and to cultivate their aesthetic sentiments.

Lower Secondary School

In Music teachers should try:

To increase children's ability in musical description and music appreciation; to cultivate their inclination for music; to help them develop a love of music, and to elevate their aesthetic sentiments.

In Fine Arts:

To enhance children's ability in artistic expression and appreciation; to enable them to enjoy the pleasure of formative creative activity; to help them develop a love of fine arts; and to deepen their aesthetic awareness.

Upper Secondary School

In general teachers should try:

To develop children's artistic ability and to help them enjoy the pleasure of creativity; to cultivate an attitude of respect for art; and to enrich their aesthetic awareness.

In Music I they should try:

Through various musical activities to develop children's creative ability in musical expression; to develop their ability in appreciation; and to cultivate in them a love of music.

In Fine Arts I they should try:

Through creative activity in painting, modelling and carving, and design to enrich children's aesthetic experiences; to develop their abilities in expression and appreciation; and to cultivate in them a love of the fine arts.

In Industrial Arts I they should try:

Through the creative activities in design and manufacture to enrich children's

aesthetic experiences; to develop their ability in expression and appreciation; and to cultivate in them a love of the industrial arts. .

In Callingraphy I they should try:

To develop children's ability to write and copy using a brush; to develop a basic ability in the expression and appreciation of calligraphy; and to cultivate in the children a love of calligraphy.

Subject Areas of Aesthetic Education Classified According to School Levels

As frequently mentioned already, the subject areas are also defined by the courses of study issued by the Ministry.

Kindergarten

1. To draw pictures and to make articles;
2. To make implements for use in playing games;
3. To arrange and assemble articles of various forms and shapes;
4. To become familiar with various materials such as sand, bricks, etc. by using them in play;
5. To observe what others have made and appreciate it;
6. To be interested in making one's own surroundings clean.

Arts and Handicrafts in Elementary Schools

1. Expression through painting (coloured paintings, sketches, wood-cut prints)
2. Expression through modelling and carving (cubic expression using paper, plastic work with clay, wood carving, etc.)
3. Design (formation using colours and shapes, designing so as to communicate, moving toys and other simple examples of handicraft for daily use)
4. Appreciation (appreciation of children's works, appreciation of works of fine art and the plastic arts in daily life).

Fine Arts in Lower Secondary Schools

1. Painting (coloured paintings, sketches, wood-cut prints)
2. Modelling (plastic work using clay, wood and stone)
3. Designing of colours, shapes and for communication
4. Industrial arts (using wood, metal and clay)
5. Appreciation (painting, plastic arts, design and industrial arts).

Fine Arts I in Upper Secondary Schools

1. Painting
2. Modelling
3. Designing for communication

4. Appreciation.

Industrial Arts I in Upper Secondary Schools

1. Basic elements in designing (composition of colours and shapes, composition in terms of materials and structure, projection drawing)
2. Design and manufacture for daily use and decorative purposes
3. Appreciation.

Objective or Creative Elements? The Starting Point for Creative Work

In expression by means of painting, children at kindergarten and in the lower grades of elementary school paint mainly by using their imagination. When they reach grade three or so, however, (aged 8 to 9 years) the teacher can see their ability to observe emerging, and from around that grade assignments in expression based on direct observation of man, animals, plants, buildings, scenery, etc. are given from time to time. Of course in parallel with this, painting using the imagination still continues.

Therefore it can be said that in general both objective as well as imaginative elements are kept throughout art activities in the upper grades of elementary schools and in lower and upper secondary schools.

It may be said however, that more emphasis is put on expression based on observation in line with the progression of grades, that is, more in lower secondary school than in elementary, more in upper secondary school than in lower secondary school.

Freedom of Expression Given to Children

It is believed in aesthetic education in Japan today that free expression by children can only help to develop their individual personalities.

However, though freedom of expression is the general rule children are not entirely free. When children are given specific assignments, a specific objective is also laid down. The teacher should arrange conditions and regulate the children's activities so that such an objective can be achieved.

For example, when the teacher asks children to paint people in work children select a motif which is most relevant to their individual experiences: one child may pick a carpenter and another a farmer. In this case, the teacher's assignment to paint people in work is a sort of framework for the children's freedom of expression and within that framework children are free to express whatever they want to.

Dramatic Art at School

Dramatic art is very effective for promoting the healthy growth of children and improving their ability in self-expression, but no definite place is assigned to it in the courses of study in Japan. However, in conjunction with reading materials in the

Japanese language, dramas are presented to aid appreciation of the written text. Also in club activities lower and upper secondary schools, almost all schools throughout the country encourage drama clubs and their activities are presented on the occasion of school cultural festivals and other occasions.

In Arts and Handicrafts in elementary school, making puppets and marionettes is often practised. On such an occasion an actual puppet or marionette show is put on by the children after producing the implements.

Interdisciplinary Approaches in Aesthetic Education

As already explained in the preceding sections, the courses of study clearly describe what is to be taught in each subject area, and classroom activities are by and large conducted on the basis of the course of study in question.

Therefore, it is not common to teach aesthetic education in association with other academic subject areas.

Integration of Folk Arts and Aesthetic Education

Among the traditional fine arts of Japan, 'Painting in India Ink' which became very popular from the 15th century onwards and 'Wood-cut Prints (Ukiyo-e)' which merged with this from around the 17th century are some of the methods of expression incorporated into present-day aesthetic education in school. But when these traditional arts are used in teaching, traditional methods are not simply used without any change. Modifications in techniques are made in accordance with children's stage of development so as to make the handling of materials easier.

For example, when wood-cut prints are selected as teaching material, the major instructional activity in the lesson is not to teach the multi-coloured technique of traditional wood-cut prints, which was common in old days. Instead, the mono-chrome wood-cut print technique is taught (black colour).

For the lower grade children at elementary school who find it difficult to use a wood-cut knife, the techniques of paper-cut prints and collation of drawing paper, have been developed and widely taught. When pupils are requested to paint topics of daily life in a series, such as life over a period of one year or historical events, the technique of the traditional picture scroll is often utilized. This could serve as an example of traditional fine arts being incorporated in fine art education at school.

Classroom Activities with Regard to Creative Arts

Classroom activities with regard to creative arts are usually as follow:

Planning of yearly activities

Based on the course of study prescribed by the national government as a national

standard for educational activities at school and using guidelines and source books published by local boards of education, the teacher may develop his own yearly plan for teaching-learning activities in the subject concerned. He or she, in developing such plan, has to take into consideration the features of the community, the school and individual children. Also it is essential to examine and produce a balance, in the case of fine arts, between four areas of production work, that is, painting, modelling, designing and industrial arts.

A balance also should be kept between theory, practice and appreciation. The topics to be dealt with throughout the year will be selected in that way. Then the topics are rearranged in order for presentation in accordance with the children's development stage and the systematization of the contents. This is done with the aim of achieving effective learning by the children.

Unit lesson hour

Usually the unit period consists of 40 to 45 minutes in elementary schools and 45 to 50 minutes for lower secondary schools. But for fine arts activities (arts and handicrafts in elementary schools) two successive unit periods are used at one time. Therefore, the actual number of hours spent on fine arts is 80 to 90 minutes in elementary schools and 90 to 100 minutes in lower secondary schools.

Process and methods of teaching-learning activities

a) Introductory stage:

To make children aware of the objectives of the lesson and to motivate them to tackle the problem or task.

b) Ideas development and planning stage:

To develop ideas and to make a plan concerning with the theme topic to be expressed.

In this stage much emphasis is given to measures to stimulate ideas. For example in the painting period, a discussion takes place at the beginning of period in order to stimulate pupils' imagination about what they want to express. At the beginning of the handicrafts period, idea sketching (making pupils sketch as many ideas as possible within a limited time) is encouraged in order to make children search for better ideas for production.

Also the basic skills necessary for production work are taught at this stage. Children proceed to develop a production plan, after deciding for themselves what they are going to express and produce, and prepare the necessary materials and tools.

c) Production stage:

Production work starts in accordance with the plan. Even at this stage, pupils are encouraged to review and devise ways of using materials more effectively

and devise what skills to use. In particular when children face a difficulty, they are encouraged to overcome the difficulty by using their own devices and creativity. This is then taken into account by the teacher who will modify or revise the original plan at the production stage.

d) Concluding stage:
Children confirm what they have studied and review their activities. They appreciate and find out genuinely individual aspects of each other's work.

Average number of periods for one specific topic

This depends on topics and materials used, but by and large from about 2 successive unit periods to 8 successive unit periods are spent on one topic.

Physical Classroom Environment for Aesthetic Education

The form of the special classroom and equipment for fine arts (handicrafts) are as follows:

Generally speaking, the form of the classroom used for aesthetic education is the same as for the home-room or the classroom used for other academic subjects, but many rooms are around 1.5 times wider in area than the usual classroom. Compared with the usual classroom, tables with a wider surface, brighter lights, supplies of water, gas and electricity, and other audio-visual aids are installed. In many cases a preparatory room is attached, which is used for the teacher's preparation and as a store-room for materials and tools.

There are schools which have two types of special rooms for fine arts: one is a room mainly for expressive activities carried out on a flat plane such as painting and designing, and another mainly for activities involving cubic expression such as modelling and industrial arts. In the schools where one specific room is used for the two different activities mentioned above, tables for pupils are usually equipped with functions for mixed use.

Reforms for Enhancing the Role of Aesthetic Education

Specialist teachers in fine arts, together with teachers who are non-specialists but who are interested in fine arts education, organize various study groups for enhancing the role of aesthetic education in general school education.

Teachers' study groups can be categorized into two classes: one consists of groups formed on the basis of the school level, such as kindergarten, elementary school, lower secondary school and upper secondary school. Another category is the one formed on the basis of contents such as painting education, wood-cut print education, design education, colour education, handicrafts education, industrial arts education, etc.

Such teachers' study groups can be regarded as driving forces for reforming aes-

thetic education in Japan; they also aim at providing various self-study opportunities for member teachers, such as in-service training, practice training, skill training, materials development, seminars and debates, etc.

The Non-Directive Method in Aesthetic Education

The concept of the non-directive method raises another question to be discussed; in Japan the non-directive method is not commonly used in aesthetic education.

As already stated, the course of study defines the objectives, contents and types of activities of fine arts education, and textbooks based on the course of study are used.

At school, teachers develop a teaching plan in accordance with the course of study and the textbook, and classroom activities are carried out on that basis. Therefore, it is said that in Japanese schools a prescriptive method is apparently used to guide children's activities in order to attain the objectives stated in the course of study.

On a very limited and experimental basis, however, a kind of non-directive method has been experimented with in fine arts education. Reports are available on experiments in which teachers did not give any directives and children themselves selected the topic and materials to pursue, and conducted activities individually. With regard to these reports, questions of how to adjust the requirements of the course of study, how to prepare a huge amount and variety of materials and tools, and how to teach individually children tackling different tasks, are being raised.

Art Materials and Implements Used

Art materials and implements used in secondary schools can be identified by subject area as follows;

Painting

Pencil, fusain, Chinese ink, felt-pen, water-colour, oil-colour, and others. At lower secondary level, painting in water-colour is given emphasis and at upper secondary level oil-colour painting.

For print art, wood-cuts are most popular, but recently dry-point, simple etching and silk-screen techniques have begun to the introduced.

Modelling and carving

In modelling, clay, plaster and paper are mainly used.

In carving, apart from wood and plastic stone, mass carving materials made of wax and plaster are used.

Design

Almost all materials used in painting are also used in design, but the major ma-

terial is poster-colour (opaque water colour). For some specific topics, a wide variety of papers and cloths are used.

Industrial Arts

Wood, metal plate (copper, aluminum) and clay for pottery are the major materials. The use of plastics, paper, bamboo and cloth as materials is also encouraged.

Creation of Children's Own Collections

In the contemporary society of Japan, the population is extremely concentrated in urbanized areas which in turn causes a crucial problem of isolation from nature for children in urban environments.

In addition, there are many manufactured toys in children's daily life, the toys being given in a completed form. Due to this flood of manufactured toys, children are deprived of the chance to create by themselves devices for play in daily life.

In such circumstances, fine arts education tries to make children develop their creative abilities by utilizing as much as possible natural materials found around them, such as sand, stone, pieces of wood, flowers, etc. These activities are given special emphasis for children in kindergarten and in the lower grades of elementary schools.

Methodological Difficulties in Promoting Aesthetic Education

It is absolutely necessary to provide children with sufficient time to develop critical and creative thinking in order to improve art education so that it becomes more creative in terms of children's work. In other words, it is important to provide sufficient time to deal with one topic and to stimulate children's initiative to think and create.

However, the scope of teaching materials and topics of fine arts education at present are very wide and varied. And when the teacher tries to digest all such topics and materials given in the course of study, its treatment becomes necessarily wide and thin, and it becomes impossible to expect vivid creative work to be produced by children. Therefore, in fine arts education in Japan a very crucial problem is how to reduce the number of topics or how to select basic and essential topics of instruction and teach these in depth to the children.

Furthermore, it is imperative, in addition to making children develop creative ways of thinking, to make them acquire basic skills and techniques for production and expression, in order to improve the quality of creative activities in fine arts education. The above situation, i.e. too many topics to be dealt with, also hampers instructional activities for skill development.

Attitudes of Pupils towards Aesthetic Education

Children in kindergartens and elementary schools show, generally speaking, a very

strong interest in arts subjects. They tend to carry out their learning activities willingly. A high degree of self-fulfillment and sense of satisfaction are likely to be observed after the lesson. But in the latter half of lower secondary schools, individual differences among pupils can be observed in their attitudes towards arts subjects, and there are pupils who do not show any interest in this subject area.

Two reasons for this may be identified. One is due to differences of development in ability and aptitudes. Differences in ability in terms of imagination, expression and intuition may become apparent at this age. Another reason may be the influence of the entrance examination into upper secondary schools, in preparation for which pupils themselves put too much emphasis on the study of academic subjects that are also entrance examination subjects. Their parents also support the pupils' attitudes towards study.

There are some schools in which the former reason has been made less important as a result of efforts by art teachers.

At upper secondary level, individual differences between students in their attitudes towards arts subjects are more apparent and bigger. The upper secondary school students who select art as an elective subject of course show a deep interest and concern in the arts.

Attitudes of Parents towards Aesthetic Education

At kindergartens and at the lower grade level of elementary schools parents tend to appreciate the sound development of the feelings of their children. Parents appreciate emphasis on learning arts subjects at this stage. But as the children move from one grade to a higher one, the emphasis that parents look for in the learning of their children also sifts to study of academic subject matter. Parents' interest or concern regarding achievements in arts subjects by their children lessens year by year.

This may be explained by the same reason as was given when looking at children's attitudes.

Examination/Test of Aesthetic Education

At the compulsory stage of schooling, no officially designated examination is conducted for any subject. That means in every subject the teacher evaluates the achievement of individual children by means of observation, teacher-made tests and others. This applies to arts, but the method of evaluation in arts varies from one teacher to another.

The following are some of the evaluation methods used by various teachers:

1. Evaluation of expressive techniques and skills as evidenced in the pupil's product;
2. Evaluation by means of the teacher's observation of expression, willingness to learn, learning attitudes and other factors;

3. Paper test on cognitive aspects of art education and the degree of the pupil's understanding;
4. Evaluation of ability in appreciation through an essay written by the pupil and other factors;
5. Teacher-made (ready-made) test on creativity, expressive ability, abilities in the field of idea development and composition, etc.

Teachers are always encouraged to develop the creativity of pupils when assessing their development and the results of their learning activities. The purpose of assessment is not to rank the abilities of pupils but to make pupils strengthen their willingness to reform themselves.

Similar methods are used at upper secondary school level which is not compulsory. For purposes of giving credits, teachers develop their own scheme for evaluating the achievement of individual students in arts studies.

For the entrance examination to the arts course of upper secondary schools (ARTS Upper Secondary School) and colleges or university departments of arts, skill and technique tests are given in addition to cognitive aspects of arts.

The contents of such skill tests are, in the case of departments of fine arts for example, sketches and painting or other means of assessing expressive ability in fine arts.

Qualifications of Art Teachers

There are two classes of regular certificates for school teachers, first and second, from kindergartens to upper secondary schools.

At elementary schools, the classroom teacher system is adopted, which means that the classroom teacher teaches all subjects including Music or Arts and Handicrafts. The teaching certificate for elementary schools is granted by the prefectural governor, following a recommendation by the prefectural board of education. The minimum qualification for getting the first class teacher certificate for elementary school is to be a graduate from a 4-year university with 16 credits in teaching subjects and 32 credits in professional subjects.

For a second class teaching certificate, a person should be a graduate from a two-year junior college with 8 credits in teaching subjects and 22 credits in professional subjects.

In some elementary schools, arts and handicrafts for fourth to sixth grades are taught by specialist subject teachers who are holders of first class certificates and specially trained in arts and handicrafts or who possess a certificate of fine arts teaching at lower secondary schools.

For teaching arts at secondary schools, a person should possess either a first class certificate in fine arts teaching for lower secondary schools or a second class certificate in fine arts teaching for upper secondary schools.

To acquire these certificates, a person should have acquired, in addition to

credits required for general subjects, 46 credits in professional subjects related to fine arts given during a four-year university course. They are as follows:

Category A

Painting	4 or 2	(6 or 4) credits
Modelling	"	(")
Industrial Arts	"	(–)
Design (including composition)	"	(6 or 4)
Theory of Fine Arts and History of Fine Arts	2	(2)
Sub-total	16	(16)

Category B

Educational Principles	3	(3) credits
Educational Psychology	"	(")
Teaching Methods of Fine Arts	"	(")
Study of Moral Education	2	(–)
Practice Teaching	2	(2)
Sub-total	13	(11)

Note: The number of credits given in the left-hand column is for acquiring the first class certificate for lower secondary school and that given in parentheses is for the second class certificate for upper secondary school.

From among the five areas of Category A, a student should acquire 16 credits as a minimum and a further 16 credits by means of options. In all, 32 credits are required to be taken from among areas in this category. From Category B a student should acquire 13 credits as a minimum and a further one credit by means of an option. In all, 14 credits are to be acquired from category B.

There is an independent certificate category for the teaching of industrial arts at upper secondary schools, and to obtain that certificate the required credits for professional subject areas are slightly different from those given above.

In-service Training for Fine Arts Teachers: Its Objective and Contents

To meet specific requests by the teaching profession, the government has laid down a law guaranteeing and encouraging in-service training for teachers. National as well as local governments establish agencies and facilities for the in-service training of teachers and provide opportunities for school teachers within their jurisdiction.

In the case of the Tokyo Metropolis, the following provisions are made for grass-roots teachers in respect of training opportunities.

Initial training for newly appointed teachers:

All newly recruited teachers are requested to attend on initial training course of 20 sessions.

The contents are mainly concerned with instructional activities using the case study method and 2 to 3 sessions deal with arts.

Training course for five-year experienced teachers:

A course for teachers with teaching experience of more than five years is organized once a year and consists of six sessions, of which one or two sessions are devoted to the study of arts.

These two courses are more or less compulsory in nature. In addition, there is a wide range of in-service training courses prepared by prefectural institutes for educational research or prefectural centres for in-service training.

For example, the Tokyo Metropolitan Institute for Educational Research and In-service Training systematically prepares various courses in order to meet requests and needs for the in-service self-training of teachers. Courses in fine arts are as follows:

Course of Long-term Voluntary Study — 25 sessions
Long-term voluntary skill training (with advisors) in painting and industrial arts, etc.

Course of Elementary Painting and Arts and Handicrafts — 10 sessions
Study of instructional methods by means of skill training for wood-cut or paper-cut print painting

Course of Lower Secondary Fine Arts — 6 sessions
Skill training for pottery

Course of Lower and Upper Secondary Fine Arts — 6 sessions
Skill training for Chinese brush painting

Course of Instructional Methods – Arts and Handicrafts – for Elementary Teachers — 5 sessions
Designed for elementary school teachers who are not specialized in the teaching of arts and handicrafts

An almost similar provision of training in Music is also available.

In addition to these, municipal boards of education and local teachers' study groups also prepare various courses and seminars for teachers in that region. The following are examples of such opportunities:

Skill training seminar organized by a municipal board of education

Once or twice a year, a skill training seminar will be organized by the local board of education in order to help elementary and lower secondary school teachers develop their skills in painting, modelling, designing and handicrafts. The instructors in such seminars are usually leading teachers of the subject in question and teacher-consultants of the local board of education.

Skill training seminar organized by teachers' study group

Three to ten times a year a local group of teachers organizes a skill training seminar on painting, modelling, design, handicrafts and industrial arts for its member-teachers.

Residential seminar during vacation

Teachers' study groups often organize 3-day or 4-day seminars during the long summer vacation.

Participation in such seminars is much more popular among kindergarten teachers, since the provision of in-service training programmes for kindergarten teachers is less frequent in comparison to the opportunities for elementary and lower secondary school teachers.

The Tokyo Metropolitan Board of Education defines the significance of in-service training opportunities in the following manner (a partial translation from the official document on in-service training courses issued by the Tokyo Metropolitan Institute for Educational Research and In-service Training):

1. School teachers are requested, in order to achieve their responsibility as members of the teaching profession, to study by themselves, to fulfil themselves through teaching activities and to upgrade their professional standards so that they can respond to the expectations of the people of Tokyo Metropolis.
2. Science and technology in contemporary society are highly developed and value systems of people vary widely from one to another. Therefore, teachers should continue to study the contents of their subjects and methods of education of the young people of today who live in this contemporary society.
3. It is desirable for teachers in Tokyo to have a proper understanding of urgent up-to-date problems of education in Tokyo and to be able to respond to these problems.

Administrative Obstacles Facing Head Teachers of Art Education:

There are very many problems and obstacles that the teachers concerned are facing in the field of aesthetic education; the following are some of these:

1. As a rule, education in schools in Japan should be based on the courses of study published by the Ministry of Education, while particular devices and inventions in individual schools are encouraged and even required. This overall regulation helps, on the one hand, to ensure a steady and continuous education programme from elementary to upper secondary levels, but on the other it tends to be a uniform education. This may be one of the reasons hampering children from developing their individuality.
2. The textbooks for fine arts are also compiled on the basis of the courses of study and they are required to be approved by the Ministry of Education. At elementary level, the schools to which subject teachers in arts and handicrafts are attached are only those in urbanized areas, and the majority of elementary schools ask classroom teachers to teach arts and handicrafts.

   There is also a tendency among teachers to rely too much on textbooks

without developing the teachers' own ideas of how to teach.

Needless to say the attitudes and techniques of teachers have very strong educational effects and in-service training is very much needed with regard to this aspect.

3. The areas of aesthetic education at the compulsory education stage are so wide that music, painting, cut-print, modelling, handicrafts, industrial arts, design, etc. are all included. It may be pointed out that the contents of art education need to be defined further. The newly revised course of study, which will be fully implemented from 1980 at elementary level, will respond to some extent to this question.
4. There is a need to expand proper facilities for art education. Preferably specialized facilities for each area of art education are needed.

   The size of classes is another problem. The number of children in one class is by and large 35 to 45 which is so large as to make individualized instruction difficult.

Cost of Art Education

The increase in the cost of materials of art education is one of the big issues for school teachers. The materials for art education are usually purchased by a fund raised by the government and by parents, and the teachers are always requested to economize on the cost of materials, which in turn raises problems for art education.

Firstly, it makes it difficult to develop the personality of children throughout education. Teachers are forced to purchase the same material in a block in order to save the money, which makes art education uniform. The used identical materials does not permit the development of individual plans for production using different materials.

Secondly, it makes it difficult to produce large scale work. Constraints on the amount of material due to financial limitations oblige the teacher and children to produce smaller scale work.

Then much concern is paid to details of work and points of skill and less attention is given to ideas. Some measures are being taken to overcome these difficulties.

For example, the utilization of less expensive materials in daily use is encouraged. Group production of larger scale work is promoted in order to enable the cost of materials to be divided among the group.

Actual Cost of Art Education at School

As a rule, the materials purchased by the school fund are limited to those materials to be used by all. The actual plan of purchase is developed by teachers taking into consideration the allotment of school funds for materials. Materials specific to the needs of individual children and materials to be used in work which pupils would take back home for daily personal use are purchased by a fund collected from parents.

In an elementary school in Tokyo (the number of children is roughly 900) the total amount of materials for arts and handicrafts for one year reached a cost of 2,068 thousand Yen, which can be broken down as follows:

School fund

Painting	Drawing paper – quarter size	12,700 Yen
	octavo size	133,700
	Coloured painting paper	319,500
	Coloured vellum paper	21,600
	Ink for printing	46,000
	Colouring materials	66,000
	Brushes	30,000
Handicrafts	Paper for handicrafts	66,500
	Coloured paper for folding play	12,000
	Binding agent	90,000
	Nails, wire, etc.	10,000

Fund from parents

Clay, wood materials, colouring materials, etc.	1,260,000

In a public lower secondary school in Tokyo, the cost for fine arts education per head per year reaches 3,000 Yen, roughly speaking; one-sixth of the cost is covered by the public (school) fund and the remaining costs are paid by parents. In a kindergarten in Tokyo the cost per head in one year reaches 2,266 Yen. In an elementary school near that kindergarten, the cost per head for one year for pupils from grade one to four is roughly 800 Yen and for pupils in grades five and six 1,500 Yen. With this amount of money the following materials are purchased:

Kindergarten

Painting and Printing

Crayons, pastel colours, water colours, finger paint colours, paper

Cubic Expression

Clay, blocks of wood, paper for folding play, building-blocks

Elementary School

Painting and Design

Crayons, poster colours, water colours, pencils, felt-pens, magic-pens

Printing

Paper, stillen, plywood, boards for printing

Modelling

Clay, block materials for cubic expression

Handicrafts

Paper, wooden materials for handicrafts, plaster, mosaic for handicrafts, wires, celluloid

PART TWO: CREATIVITY DEVELOPMENT IN AESTHETIC EDUCATION

----- Case Studies in Fine Arts Education -----

Creativity Education in Fine Arts Education

The present course of study for elementary schools issued by the Ministry of Education prescribes the objectives of 'Arts and Handicrafts' as follows: "To help children to cultivate aesthetic awareness and the ability to develop forms of creative expression through moulding and carving activities, as well as to help them to cultivate respect for technical skill, and to make full use of their capabilities". Clearly, the basis of the objectives are the development of creativity and the enrichment of awareness.

The development of creativity as one of the main objectives of Arts and Handicrafts Education is by no means a newly developed objective of Arts education in Japan. As early as 1920, creativity education was proposed. Since then, it has been consistently regarded as an important part of fine arts education up to the present day. Between the creativity education of those days and the present, however, there is a wide gap in pedagogical backgrounds, and teaching methods.

Even though creativity education had been regarded as an objective and a teaching principle, when it was first brought in, the actual teaching process was still in many cases centred around skill. In another words, even though the term of creativity was highly spoken of, it did not develop beyond the framework of a concept and, hence practical teaching methods were not developed. Nowadays, however, various methods of developing creativity have been introduced and practical and realistic steps have been taken to discover teaching methods. Many attempts are being made in this area.

In early thinking about creativity education, the idea of inspiring art education with creativity was dominant because of the relationship between the nature of art and creativity. In other words, "Art is creativity itself. In fine arts, art education is provided. Therefore, fine arts education develops creativity." This idea represented the main argument on the subject of creativity education in those days. It naturally leads to the idea that among the general subjects in school only the teaching of fine arts offers education in creativity, and, even further to the strong opinion that fine arts education has a monopoly in education in creativity. However, education in creativity should not be the monopoly of fine arts education. It is rightly recognized in present-day Japanese education that creativity should be pursued throughout all educational activities. In addition, if creativity in art education were seen only as part of a theoretical framework of art, it would be very difficult to develop practical and useful methods of teaching it. It scarcely needs saying that in order to develop practical and useful teaching methods for developing creativity, it is necessary to appreciate children's creative activities, to give instruction from the children's standpoint

and to keep its effects constantly in mind while developing adequate methods. Currently, education in creativity is largely dealt with in this way by school teachers.

In developing methods of teaching creativity, the following ideas are used as bases:

1) The learning of fine arts itself does not constitute learning creativity. In the process of learning arts, there are two activities: one is the development of creative thinking, and the other that of technical skill. So it is possible to separate the creative thinking from skill development.
2) If the development of creative thinking can be separated from the development of skill, the emphasis in teaching should be placed on the former.
3) In fine arts, the outcome of child's learning activity takes the form of an actual product. But in promoting children's creative activities, the learning process becomes a more important part than a final output.
4) When creative thinking is observed during the children's learning process, it is important to allot enough time to it and to provide practical measures to develop it.

In the following chapter, some case studies of instructional activities for creativity development in painting and handicrafts are presented.

Methods and Instruction for Developing Creative Activities

1) Introductory teaching process for stimulating children's imagination

Case No. 1

Topic: World of insects (painting by imagination)

Grade: Fifth grade

Objectives: To make children imagine the world of insects and express it freely.

Instructional steps:

(1) At the beginning, the teacher tells the following story and lets the children imagine what they experience when they go into the world of insects:

The story told by the teacher

- One day, you go out on an expedition, carrying lunch boxes for three meals.
- You take the Tobu Line.
- You get off at a small, country-side station with a mountain nearby.
- You ford the brook and, then, go to an unexplored place where there are trees and plants taller than you are.
- It gets dark, it's already evening.
- This is the world of insects.
- Try to paint the things which happened and what you saw during an overnight stay in such a place.

(2) After thinking about their ideas, the pupils are allowed to start painting.

(3) Before they colour their paintings, some instruction on colours should be given as to how to express the atmosphere of dusk or night.

(4) After the paintings are finished, let the pupils explain their own work and observe each other's work.

By listening to this fairy tale, infants will expand their imagination and be absorbed into the world of the story. As if they themselves were the heroes or heroines of the story, they will follow it with excitement, delight and sorrow. And they will form their own imaginary world, without considering whether it is reality or unreality.

At the age of fifth grade in elementary school, children can make a distinction between reality and unreality. But still they readily accept an imaginary world in their minds. If the pupils are given an appropriate introduction, it is not so difficult to let their imagination be fully liberated and fly from the world of reality to that of unreality. Often, they really long to go on such an imaginary expedition. And it is painting by imagination that can satisfy this longing.

In this case, special attention must be paid to the introductory activities of the teacher and to the way of presenting the story.

Generally, when a teacher deals with such a topic, he tells the pupils:

"Imagine the world of insects."

"Imagine you were a insect."

Such ordinary words can give some direction to children's learning activities, but do not have enough attraction to move children's feelings. Imagination is considered to be closely related with emotional factors. If so, stimulating one's emotions might be an effective way of liberating the imagination. For this reason, the teacher's way of presentation should be one which penetrates deeply into children's feelings and vigorously stirs up their interest.

In that sense, ways of grasping the children's emotion and leading them from the world of reality to that of unreality are often taken. Actually, 'the Tobu Line' is a real railway which passes near their school. A 'small country-side station with a mountain nearby' is also a real station that every child knows well. With the phrase 'carrying lunch boxes for three meals' the children come to feel as if they were going out for a picnic and they are already preoccupied by the teacher's words. As the words 'brook', 'many trees' and 'plants taller than you' are mentioned, the pupils are gradually led to the world of unreality. The phrase "It gets dark; it's already evening." gives a sense of time, and at the same time with the phrase "This is the world of insects," the pupils are led completely to the world of unreality.

The last phrase is "Try to paint the things which happened and you saw during an over-night stay in such a place." Then the children are liberated into the world of imagination and develop their own images.

2) Basic Factors for Developing Ideas

Case No. 2

Topic: Arranged patterns (composition of colours and figures)

Grade: Fourth grade

Objectives: To make pupils aware of beauty of sequence and rhythm;
To make pupils devise various ways of placing and combining figures;
By placing figures of the same unit in various ways.

Instructional steps:

(1) The teacher teaches that a different beauty can be found if the figures are arranged in a series even though each figure is very simple.

(2) Then, every child chooses a basic figure for himself or herself. The figure can be that of an animal, a plant, a utensil, a letter or something abstract, but it has to be as simple as possible. Not too much time should be taken on drawing each figure.

(3) The children try a few ways of arranging the figures by using sketches.

(4) The teacher makes the children confirm, in discussion, how many patterns they can find by arranging the figures. At this stage, the children still cannot find many patterns.

(5) The teacher tells the children that there are various ways of arranging the figures. Then, the teacher gives them some matches, and lets them try to arrange these matches in various ways (Figure No. 1).

(6) Then the children are asked to try an arrangement with a pair of matches (Figure No. 2).

(7) From the above attempts, children choose one of their favourite combinations and develop a design in a series.

(8) Also the children are required to devise colour arrangements, paying attention to the background colour.

Children choose an insect, bird or leaf for their basic figure. The choice of a single unit might in itself seem trivial, but if the figures are arranged in accordance with fixed principles, a sense of rhythmical movement will emerge from a sequential arrangement of figures. In addition, so as to make children aware of the beauty produced by regularity in arrangement, another objective is set for this lesson. This is to make children devise ways of arranging the figures and through this is to make them understand the nature of figures and reflect on the regularity of new arrangements. Steps (5) and (6) above are teaching activities developed for this purpose.

Usually, teachers request children to produce various patterns of figure arrangements immediately after steps (1) and (2) above. This tends to result in trivial arrangements and not enough efforts are made to finding out various different methods of arrangement. Even if the teacher gives the instruction: "Try to devise something",

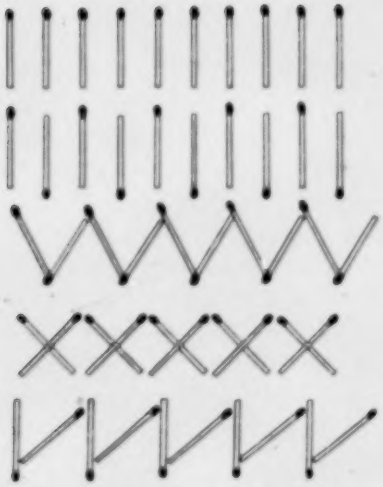


Figure 1: Combinations of Matches

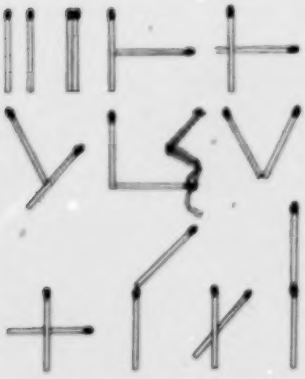


Figure 2: Combination of Two Matches

the outcome remains more or less the same.

The teacher in Case No. 2 recognized this point. And rather than giving children the instruction "Try to devise something", he started to try and create environmental conditions which would enable the children themselves to take the initiative in devising new arrangements. The conditions developed in this case are the trial sketches and discussions illustrated in steps (3) and (4) above. In the fourth grade however,

it takes time for children to draw sketches, and sketching is not an appropriate method at this level to make try a number of patterns. This is why the use of matches was devised by the teacher. The match is considered as representing the basic figure chosen by the children, and by making them try to arrange the matches in various ways the teacher aims to expand the scope of their ideas. In trials with a pair of matches, new combinations can be created spontaneously. At the same time the relationships of two matches to each other and their characteristics can be easily observed. These are:

- Separating, joining and overlapping (relationships between figures and spaces)
- Placing them in rectangular, diagonal and parallel positions (direction)
- Joining them at the top, in the middle and at the edges (position).

In this exercise, the size of the figure is not taken into consideration, but the teacher may give some suggestions about size or on breaking matches and re-combining them, so that more variations can be developed.

In the combination patterns practised so far, by replacing the matches with the figures for an insect, bird, leaf, etc., children can return to an earlier learning stage. By picking up their own favourite pattern from among many ideas they can then start to produce serial pattern.

3) Points and Measures for Developing Creative Thinking

Case No. 3

Topic: Production of a poster

Grade: Second grade of lower secondary school

Objectives: By producing a poster for 'Green Week';
To make pupils devise means of appealing to audiences;
To make pupils devise colours and shapes which express the points of attraction with beauty and effect.

Instructional steps:

(1) Firstly, the teacher reminds pupils of the purposes and functions which a poster performs and by discussion, deepens their understanding of it. Some samples can also be shown.

(2) The teacher announces the theme of the poster. The theme this time is Green Week.

(3) By discussion, the pupils deepen their understanding of the effects of the Green Week poster.

(4) The pupils prepare the materials and tools to be used.

(5) The teacher encourages the pupils to examine the topic for the Green Week poster.

(6) After choosing a topic, the pupils are asked to devise ways of expressing it.

(7) The pupils study how to organize the expression of the topic.

(8) The pupils study colour effects.

(9) Then, the teacher asks them to arrange the production stages.

(10) The pupils sketch their ideas on paper.

(11) The teacher asks the pupils to make form cleaner and write in necessary letters.

(12) Paint colours.

(13) Pupils evaluate the effects of their own products.

(14) The pupils show their own work to others, and compare it with that of others.

(15) The teacher reviews and evaluate the whole process.

In big cities, alienation from nature hampers the normal daily life of citizens, and as one of the counter-measures the green campaign is organized from time to time.

Green Week is the week of this campaign. At that season, poster production for the Green Week sometimes is picked up at school in order to strengthen children's awareness for the green campaign.

The case given above shows typical instruction processes for poster production. When the children's activities in the process are analyzed, it is easily seen that some are very much creative and others are concerned with skill development. If the teacher wants to carry out his teaching activities with an emphasis on the creative aspects of activities, he should select those steps in which creative activities are seen and put emphasis on them. In the instruction steps of case No. 3 above, steps (5) through (8) would be examples. To put emphasis on them means to spend much more time on them and further to take measures to stimulate creative thinking in children. There are many ways of stimulating creative thinking, and some examples closely related to case No. 3 above might be as follows:

Case No. 3 – Steps (5), (6), (7) and (8)

a) In step (5): Try to find out the starting point of the development of ideas in children's concrete daily experiences. Put emphasis on the specific individual experiences of each child.

b) In step (5): Make children associate the word 'Green' with other words, phenomena, scenes etc., and let them enumerate these.

c) In steps (5), (6) and (7): Have the children draw as many sketches as possible.

d) In step (8): Do not make children colour directly. Make them match colours and make sure of the colour effects by using other pieces of paper. The colour matching should be done as many times as possible.

In step (5), attention should be paid especially to preventing children basing their ideas on existing posters. When pupils have to undertake poster production, they will remember the posters they saw in their daily life and in the cities. If instruction is given without much attention being paid to this, pupils will produce a preconceived poster, no different from the ready-made concept of existing posters in their minds. In such a case, individual children cannot be expected to produce a creative poster.

The idea sketches used in steps (5), (6) and (7) are very effective in stimulating children's creative thinking. The more sketches are made, the more possibilities there are of good ideas prevailing.

To prove this, research was made to evaluate the quality and quantity of each child's idea, by making children draw as many sketches as possible in a limited amount of time. In comparing the output of the first half and the second half in this research, it was found that more ideas with better quality emerged in the second half.

As the idea sketch is merely to develop creative idea, the skillfulness of the sketches does not matter. Rather, it is important to make children sketch freely as many sketches as possible. These sketches should be differentiated from those for painting or for communicating with others.

There is an age limitation on this idea sketch method. It is not effective for children in the lower grades of elementary school.

Matching colours in step (8) has the same implication as idea sketch. By selecting one colour match after making many trials, children are given more opportunities to appreciate the effect of colour combinations.

4) Ideas Development Based on Children's Experiences

In step (5) of case No. 3, the children are requested to examine what topic they should choose for a Green Week poster. Almost all the pupils then tend to choose 'tree' as their topic to depict. At this stage, if the teacher's instruction is given carefully, the 'tree' remains a stereotyped concept and is hardly selected as a topic.

Generally speaking, when we see butterflies flying in the garden or moths gathering round the light in summer, we tend to conceptualize these as insects. It is important to have a concept to generalize concrete facts in order to develop our thinking, particularly logical thinking. And for children, being able to conceptualize several facts is an independent faculty. However, it sometimes happens that conceptualization becomes a source of interference with the development of children's creative thinking. The abstract concept exerts a strong influence on and imposes constraints on the development of free images by children. This can be applied to the example 'tree' in poster production for Green Week.

From this point of view, in step (5), the teacher made children recall their experiences about 'tree'. By using their living experiences, the teacher tried to make the children free from the abstract concept 'tree'. In other words, the teacher tried to make the children develop their ideas from the experience of everyday life. The following are 'tree' images that children have had. (The teacher asked children to note their tree images.)

Case No. 3, Step (5)

* 'Tree': when we say 'tree', it is a conceptualized tree that everyone knows.

* 'Tree in the town'; 'Tree on the mountain'; 'Tree in the park': in this case, the concept of 'tree' is narrowed down, but there is still no special reference to the children's daily life.

In the following examples, 'tree' takes concrete form as a part of children's living experience.

* "The tree in the park near my home; it has broken branches and a damaged trunk."
* "There are a lot of flowers and young plants in a gardener's house on the way home from school."
* "My house is on the third floor of a high-storey apartment house. I enjoy watching some plants in the window box. Beyond the plants, there are a number of grey coloured roofs."
* "The soccer ball was accidentally thrown into the flower bed of the school garden and damaged some of the flowers. Poor flowers!"
* "Tree in the park fit beautifully with a fountain. I gave it the name 'green fountain'."

Children's favourite colour 'green' will sometimes take them out and away from their concrete experiences to the world of dreams and fertile imagination. The following are examples of such cases and depict the world of imagination.

* "If there were a lot of trees at our school, thousands of birds could come, and our school would be changed into a bird school."
* "If there were a lot of trees in a city, my eyes would be filled with green. 'To add green to your eyes'; I thought of this as a topic for the poster – like an advertisement for an eye drop." (She had drawn a big eye spread all over the paper and drew the green of the town within the eye.)
* "I am a witch. As soon as I dropped the green paint out of the tube, dead trees were revitalized with lots of green leaves."

If children are asked to use everyday settings as a starting point for their ideas, they are accompanied by their own feeling and this represents a substantial attraction to people to look at the poster, in other words its power to appeal. This appeal is obtained not only by techniques of expression but also, as this case implies, by communicating real and deep feelings on the part of the painter.

5) Development of Ideas Based on Painting Techniques

Case No. 4

Topic: Poster painted by 'marbling' technique

Grade: First grade in lower secondary school

Objectives: To make pupils try marbling technique and to make them produce a poster with a pattern made by marbling.

Instructional steps:

(1) Marbling technique is taught at the beginning.

(2) Pupils try several marblings on smaller pieces of paper. Pupils are expected to become familiar with ways of dropping colours and placing pieces of paper.

(3) Pupils carry out marbling on large size paper. If possible, two different patterns should be attempted by changing the ways of colour dropping.

(4) Pupils let their work dry.

(5) Pupils are asked to imagine associations based on the marbling patterns they have produced.

For example: A stream, a contour line on a map, the annual rings of a tree, a stain on the wall, clouds etc. may be mentioned by pupils as images associated with the patterns. The images will differ from one pattern to another, but pupils are encouraged to enumerate as many images as possible in association with patterns they have produced.

(6) Pupils are requested to examine whether marbling pattern can be used for a poster. They have to decide on a topic for the poster.

(7) Pupils decide on colours and design a pattern to express the topic and poster production starts.

Marbling is a technique consisting dropping oil colours on the surface of the water and copying the pattern produced on the water by the chemical reaction between oil and water. In Japan a similar technique has traditionally been developed, called 'Sumi-nagashi' or 'Indian Ink Dropping'.

This is a case where emphasis is put on ideas devised from techniques. More strictly speaking, the primary emphasis is put on stimulating the flexible development of ideas devised from colours and patterns that are formed by chance using the marbling technique.

The process of activities by pupils in this case can be illustrated as follows:

(1) To form a pattern by marbling: circles overlapped. (Expression technique)

(2) To imagine an association with the pattern: it looked like a contour line. (Motif)

(3) To examine whether or not the pattern can be used for a poster. The contour line design can be used, together with a tree design, for a poster to announce the opening of the mountain. (Topic)

The process of these learning activities can be represented as:—

Expression technique → Motif → Topic

In this way, this case produced posters on various topics such as:

* Overlapping circles – Annual rings of tree → Use them for a poster for Green Week.
* Streaming lines – Streaming water → Use them for a poster for a swimming tournament.
* Disordered lines – Stains on the wall → Use them for a poster for the cam-

paign 'Keep our School Clean'.

In general, the idea that 'the purpose is to make a poster' is taught at the beginning of the class. The topic is also given at the beginning. Then the motif which expresses the topic visually is selected.

The colour and the pattern which express the motif effectively are devised. Thus, the usual process of poster making is:

Topic → Motif → Expression.

In this case study No. 4, however, the completely opposite process occurs, since this case puts emphasis, as already explained, on the development of ideas from the colour and the pattern produced by a specific technique.

Such a poster production process is quite unusual in actual circumstances of a society. This is one of the instructional methods which are used only for educational purposes.

6) Development of Ideas Based on Materials to Be Used

Case No. 5

Topic: To make a mini-bridge

Grade: Sixth grade

Objectives: To make children understand the nature and the structure of materials;
To devise various forms of bridges by the proper use of materials;
Through this activity to make a mini-bridge.

Materials: Stand on which to place the mini-bridge; tiny pieces of wood; pieces of bamboo; cardboard; saw; scissors; glue; matchbox with pebbles.

Instructional steps:

(1) The teacher gives the pupils a brief explanation concerning the bridge and gives them the job of making a mini-bridge.
Children may show a interest in forms of bridges.

(2) The teacher does not allow the children complete freedom in making the bridge; certain conditions for its construction are given.

(3) The teacher distributes the bridge construction materials.

(4) The teacher shows children the wooden stand, on which the bridge is to be placed (Figure 3).

The teacher explains;

"(a) and (b) in Figure 3 are the bridge supports on both sides and therefore a river runs between them."

"This river is deep and runs fast."

"It is therefore impossible to build another bridge-support between (a) and (b)."

"So we have to build the bridge between (a) and (b)."

The teacher gives the environmental conditions and framework of the work to

be done.

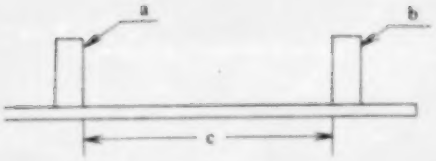


Figure 3

(5) Then, the teacher puts a piece of cardboard over (a) and (b) of Figure 3, and puts a matchbox containing the pebbles on the cardboard.
The cardboard is regarded as a bridge girder and the matchbox as a motor-car.
When the matchbox is put on the cardboard, the cardboard inevitably sags down as shown in Figure 4.
Teacher explains:
"If you are observing this carefully you should notice that there is no such a bridge which curves downwards".
"To make a bridge dynamically strong, slightly upward curving is desirable. Of course, it depends on the purpose of bridge. Railway bridges must be flat."
Then the teacher gives the following conditions that have to be met for the bridge construction.
"The cardboard must not sag down when the matchbox is put on it."
"In order to achieve this aim, various properties of materials have to be purposefully utilized. For example, the strength of wood pieces, the flexibility of bamboo pieces, the pulling power of string, etc."
"No bridge supports are to be constructed between (a) and (b)."
"Try to fulfill the above conditions using as few materials as possible."

(6) Pupils are encouraged to touch and play with metarials. They will learn the properties of materials by bending bamboo pieces, pulling strings, etc.

(7) Pupils are then required to sketch their ideas of a bridge form within the given conditions. This is an idea sketch and not a plan for construction. Therefore, it is not necessary to sketch carefully. The important point is to sketch freely as many ideas as possible.

Note: In this case, the teacher asked the pupils to devise a bridge form on the basis of knowledge of the materials to be used, which has been

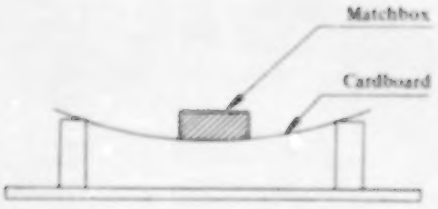


Figure 4

gained in the previous steps. Therefore, no construction plan needed to be developed after the ideas sketch step.

(8) Pupils start to choose a favourite design from their own ideas sketches. Then the production work starts. During the production process, the structure should be tested at times by using the weighted matchbox.

(9) Completion of the work.

The teacher conducts a discussion session among the pupils and makes them confirm:

- Whether the bridge is structurally strong enough; and
- Whether it is aesthetically beautiful.

The teacher also confirms that various forms of bridge have been produced. Indeed, a variety of forms of bridge have been devised by the pupils, several examples of which are given in Figure 5 on the page 73.

A further discussion session among pupils is organized later about various forms of a real bridge.

This case paid special attention to the ways in which the construction conditions are being presented, together with the properties of the materials to be used. The purpose of paying such attention was to develop children's creative activities. Before looking further at this aspect, it would be appropriate to illustrate an example of an ordinary instruction process. This consists of the following steps:

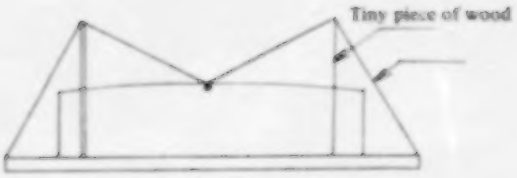
(1) The pupils are requested, by using textbooks and reference materials, to find out what forms of bridge exist.

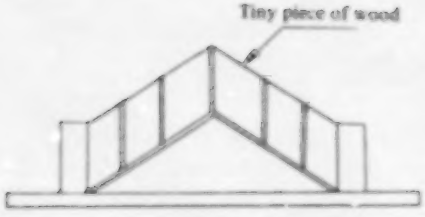
(2) The pupils proceed to consider how to assemble it and make it strong.

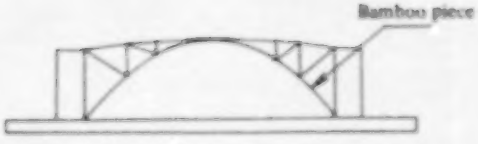
The teacher makes a model as shown in Figure 6-a, and demonstrates that Figures 6-a, b and c are structurally weak and Figures 6-d and e are strong.

(3) The pupils sketch the form of bridge they want to make.

(4) The production work starts.


Tiny piece of wood


Tiny piece of wood


Bamboo piece

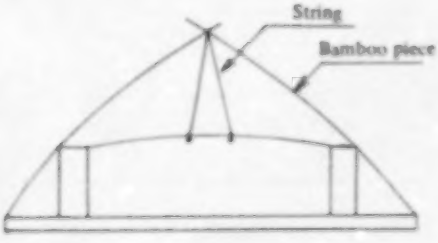

String
Bamboo piece

Figure 5

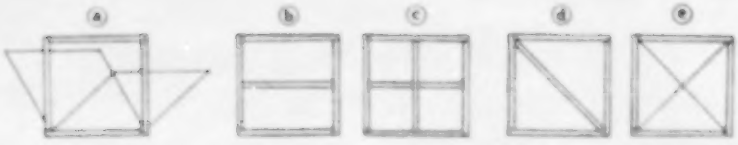


Figure 6

According to this ordinary teaching process, almost all the pupils are stimulated by the textbook or reference materials. They associate with real bridges they know already and try to make a mini-bridge modelled on the real one. In step (2) above the teacher explained the basic factors for the structure. But pupils understood these only as theoretical knowledge and were not able to apply this knowledge in their work. Sometimes it may be possible to discover, among pupils' work, a bridge with a truss structure. But it is an imitation of the form of a real bridge and the truss structure is not worked out. Case No. 5 was developed following a review of the defects of the usual teaching process of mini-bridge making.

In this case, a special devise was employed to give pupils intentionally prepared materials. Among a set of materials there is a piece of thin square timber material (made of Japanese cypress, 7mm x 7mm). This square timber material is made intentionally shorter than the distance 'c' in Figure 3, the distance between a and b. If pupils were given square timber material longer than the distance c, they would certainly use it for the bridge girder. Then, since the square timber material has enough strength to support the weight of the matchbox, the phenomenon seen in the Figure 4, with the bridge girder sagging downwards, is not observed.

From such a situation, no ideas of using truss or suspension techniques for bridge making emerge. Thus, the length of timber material is purposely made shorter and a piece of cardboard of the proper length is given. The cardboard is to be put on two supports and the matchbox is to be placed on it. Then the bridge girder sags downwards and pupils are forced to solve the structural problem of the bridge girder.

Making the best use of materials includes making use of the specific properties of materials. To make pupils learn this, the teacher prepared a situation in which it was a necessity to solve the structural problem. Furthermore, the teacher prepared conditions which gave pupils experience with different properties of materials, the elasticity of bamboo pieces, the propping power of string, etc.

The teacher did not allow pupils to see reference materials on real bridges at the beginning of the lesson. Needless to say, this was so as to prevent the pupils' interests from concentrating on the forms of bridges. The reference materials are given at the end of lesson.

In this case too, the teacher asked pupils to make as many ideas sketches as pos-

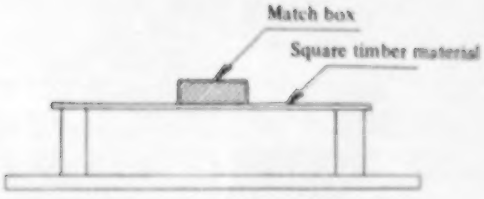


Figure 7

sible. And many different forms of bridge were devised, as Figure 5 shows. Various ideas were developed to support the bridge girder, such as suspending by string, supporting it by tiny wood pieces, supporting it by bamboo pieces utilizing the elasticity of bamboo, etc. The properties of materials are utilized structurally.

Problems in Creativity Education

It is true that various attempts to develop children's creativity help greatly to forward fine arts education. Yet there are problems to be solved in this kind of education in creativity. There are as follows:

- Because of inadequacy in skill for production work, children cannot express their creativity in a concrete form.
- At the same time, children's creative activities are hampered by the lack of basic production skills.

Many fine arts teachers complain often about the lack of skills among children. The low level of production skill of children is serious problem in fine arts education in Japan.

In the days when fine arts education put emphasis on skills, the mastering of skills in itself was considered as the purpose of fine arts education. On the contrary, today, the development of children's creativity is given special emphasis in fine arts education, and creative and original thinking among children is highly appreciated. Nowadays teachers' efforts in fine arts education are focussed on how to make children develop a rich imagination and flexible ideas. Thus, skills and techniques have become of secondary importance as a mere means of expression. Further, it may be

said that there is even a trend to neglect skills and techniques in order to put due emphasis on the creative aspect of fine arts education. This might be a reason for the trend towards a decreasing skill level in production work among children.

However, this does not mean that it is acceptable to revive the skill-oriented fine arts education of older days, since we are quite aware that fine arts education in older days suppressed or restricted creativity in children.

Basically speaking, skill is an integral part for aesthetic expression activities. And skill training in fine arts education should not restrict but should promote children's creativity. To achieve this aim is a crucial task for creative fine arts education in Japan.

SOME RESEARCH ACTIVITIES OF NIER

* IEA Second Math Study
* Basic Study on Promoting Development in Children Failing in Schoolwork
* Research and Development for Environmental Education Curriculum
* Evaluations of Problem-centered CAI Learning Programs for Upper Secondary Physics
* Language Expression and Concept Formation in Science Education

IEA SECOND MATH STUDY

This is a survey carried out as the international comparative study on educational achievement organized by the International Association for the Evaluation of Educational Achievement (IEA). A similar survey on mathematics achievement was carried out in 1964, in which NIER also participated. The present survey is being carried out for the second time and is scheduled for 1980. Preparations in Japan are being made under the direction of the Mathematics Education Research Section of the Science Education Research Center in line with the schedule of the international headquarters of IEA.

Preparations at the International Level

(1) Proposed test items for the survey have been constructed (lower secondary school level – 12 sets of 40 items, or 480 items; upper secondary school level – 15 sets of 15 items, or 225 items), and preliminary testing was carried out with the items allotted to each country. On the basis of these results, a set of items was chosen for the survey and the opinions of participating countries were solicited.

(2) Questionnaires for students and teachers were prepared along with attitude scales. A preliminary survey was made as in (1), and opinions from participating countries were solicited. Then the final questionnaire and attitude scale forms were constructed and submitted to each country for comment.

(3) A detailed manual for sample selection was prepared, and the sampling is to be made by each country.

(4) A survey guide was prepared and the survey method and period for each country are determined accordingly. Then a comprehensive preliminary survey using a small number of schools was carried out in the same way as the actual survey in order to find and solve any problems that still exist.

(5) Preparations are to be made so that the survey can be carried out during fiscal 1980 by all participating countries.

Preparations in Japan

The preliminary surveys in (1) and (2) above were carried out in 1978 at 63 schools (30 lower secondary and 33 upper secondary schools) in 12 prefectures, and the results and comments were sent to the international headquarters. Also, the final drafts of the test items and questionnaires proposed after March, 1979, were discussed at the IEA Japan Conference of Specialists in May and sent to the headquarters along with opinions concerning item suitability, relations to school curricula, and questionnaire suitability. Furthermore, the sample selection method and other related considerations for Japan were discussed at the Conference of Specialists in July and pro-

posals were sent to the headquarters.

Outline of the Survey

In line with the international headquarters schedule, NIER will carry out the survey according to the following general plan.

(1) Survey Population

a) First year lower secondary school students (Population A)

b) Third year students in the general and science courses of full-time upper secondary schools who are taking at least five credits in such subject-matters as Mathematics III (Population B)

(2) Sampling

Using a stratified random sampling method, a total of 200 each of lower and upper secondary schools are selected, and one class is to be chosen randomly from each school. The survey samples are the students in the classes thus selected.

(3) Survey Items

The survey will include mathematics tests, questionnaires for students, teachers, and schools.

(4) Survey Period

For lower secondary schools, the first run of the survey has been already carried out in May, 1980, and the second run will be in February, 1981. For upper secondary schools, the survey will be carried out on one day in the middle of November, 1980.

BASIC STUDY ON PROMOTING DEVELOPMENT IN CHILDREN FAILING IN SCHOOLWORK

Problems and Tasks

Today, the lack of basic academic ability and the poor academic performance of upper secondary students have become a significant social problem. In order to effectively tackle this problem, however, it is necessary to solve the problem of poor academic performance during the elementary and lower secondary school years. There is no doubt a variety of causes and types of poor academic performance among elementary school children, including the following three general cases:

(1) those in which development has been retarded in previous stages, so that abstraction and generalization are especially low and the child is thus unable to respond to the demands of instruction.

(2) those in which development is normal, but the child has fallen behind because previous material was not well-learned, and

(3) those in which development is normal, but the child has fallen behind due to lack of interest and effort because of family environment and other problems.

From the standpoints of developmental psychology and teaching/learning psychology, poor academic performance in cases falling under (1) above presents the most serious problems. In elementary school, cases such as these are actually occurring, and they usually take one of the following two forms:

(a) the development of thinking was already retarded by the time of entrance to elementary school, and the child fell behind during the first grade, and

(b) development was normal at the time of enrollment in elementary school, but mental development did not proceed satisfactorily during the lower and middle grades and the learning becomes difficult when abstract thought is increasingly needed in learning at middle and upper grades.

In such cases, it is necessary to organize some sort of specific education (development promotion education) activities to actively promote mental (learning ability) development during a fixed period of time so that the child makes the developmental gains required in order to keep up with the normal pace of instruction.

Unfortunately however, along with the issue of interrelationship of development and teaching/learning, the education for child development promotion is an entirely untouched field in education and educational psychology in Japan. There are therefore no methods available for the discovery and diagnosis of this type of learning problem, and there are no established principles, methods, or programs for developmental promotion education.

The present study project is for three years from 1979. With the above-mentioned problems and situation in mind, the following general research tasks will be

worked on.

(1) Diagnostic development and academic tests will be developed to aid in the discovery and diagnosis of learning difficulty, and both synchronic and diachronic surveys will be carried out in order to clarify the situation and characteristics of the learning ability of elementary and lower secondary school students.
(2) A special experimental educational program will be constructed (including such areas as language, logic, quantity, and space) for lower and middle grade elementary school children who show poor academic performance due to retarded development. This program will then be carried out experimentally with individuals and groups of children. The educational effect and learning process during the experiment will be analyzed, and the results will be used in the study of principles, methods, and content for development promotion education.

Progress Development Diagnosis and Related Investigations: As part of the preparations for the construction of a development diagnosis test, the first preliminary investigation was made June and July, 1979. In the fall, a preliminary investigation concerning the academic ability test and the second preliminary investigation concerning the development diagnosis test were made. Then in February and March, 1980, the main investigation has been carried out with approximately 1,000 elementary school students (1st to 6th grade) as the subjects.

Educational Program and Related Experiments: In 1978 an experiment was carried out concerning the understanding of quantity relations. Experimental programs are prepared concerning language (grammar), space and arrangements, and logic (permutation and combination). For these purposes, a confirmation test was administered in June and July, 1979, and from September, 1979, experimental educational programs (with individual students) have been carried out for three months at three elementary schools in Tokyo.

RESEARCH AND DEVELOPMENT FOR ENVIRONMENTAL EDUCATION CURRICULUM

This special research project begins in 1979 and will continue for three years up to the end of fiscal 1981. The aims of the project are: (1) to clarify the objectives, range of educational content, and the grade level content distribution for environmental education, and (2) to develop the necessary instructional materials for environmental education. The project team members include, in addition to NIER staff, experts in this field, school teachers, and staff from local education centers. However, it is not necessarily true that there exists a common concept of environmental education in Japan. Up to the present, "pollution education" has been a widely used term, but environmental education, which includes "pollution education", is a broader concept to include the basic understanding of the relationship between man and his environment, as well as the active development of attitudes toward and interest in the environment.

Interest in environmental education in Japan is believed to have begun in the early 1960's when high pace economic growth was in full swing and pollution problems began to occur increasingly throughout the country. In the 1960's, there developed a clear recognition of the fact that, in order to thoroughly solve the existing environmental problems, it would be necessary to carry out a thorough-going program of environmental education. Thus, from the late 1960's, local boards of education began to publish teacher's guides on pollution, and the development of materials for environmental education was actively promoted throughout the country.

On the other hand, turning attention to foreign developments, in the 1970's the United Nations and Unesco sponsored three large-scale international conferences on the promotion and development of curriculum for environmental education – i.e., the United Nations Human Environment Conference held in Stockholm in 1972, the International Environmental Education Conference held in Beograd, Yugoslavia, in 1975, and the Intergovernmental Conference on Environmental Education held in Tovirish, U.S.S.R., in 1977. At the Stockholm Human Environment Conference, a significant statement was made concerning environmental education – i.e., the aim of environmental education is to bring up people who are capable of taking definite action to control and manage the environment surrounding themselves. Thus the essence of environmental education is to develop desirable attitudes and behaviors toward the environment, and finally to expect self-reform of individuals in relation to the environment. Then, in the following Beograd Conference, the "Beograd Charter" for environmental education was drawn up. Here too, the final aim of action

concerning the environment is stated to be the improvement of all ecological aspects related to man and nature, including human interrelations.

In order to work out the details of the objectives and content for environmental education as clarified by these international conferences and in line with the situation in Japan, a project team was formed of experts concerned with various aspects of this problem, including those in the fields of physical geography, biology, physics, chemistry, and social studies education, as well as specialists in curriculum instructional methodology. In the first year of this project, 1979, a nationwide survey was made concerning environmental education activities up to the present, with children and school teachers as the respondents. Also, in connection with this survey, an investigation was made of the awareness of Japanese teachers in environmental education including their experiences in it. In Japanese school education today, there is no special course in environmental education, and the instructional activities of environmental education is being carried out in related subject areas such as social studies, science, and Japanese language. For the purposes of curriculum development, therefore, it is necessary to investigate the most appropriate place of environmental education in the curriculum and the way in which this education is conceived and handled. Along with these surveys and investigations, an inquiry is being made into the theoretical framework for the objectives and content of environmental education, using both Japanese and foreign reference materials as aids.

EVALUATION OF PROBLEM-CENTERED CAI LEARNING PROGRAMS FOR UPPER SECONDARY PHYSICS

Year-long CAI Instruction

From 1975, a CAI system was set up at the Oyamadai Upper Secondary School in Tokyo. The second year Physics course was converted to a CAI-centered individual learning course (three hours per week for each of eight classes), and experimental research was carried out. During these activities, various improvements were made in the basic instructional design, the software and hardware used, course design, and the overall system, with the result that a stable individual learning system was established. Also, in 1978, CAI Physics programs were completed for courses at all grade levels of upper secondary school.

Problem-centered Learning Programs

By immediately responding to the learner responses, CAI provides for "learning by doing" activities. This is one of the basic principles behind the programs involved in this research. Thus a problem is first presented and then followed by successive problems, so that the programs are in this sense question-oriented. Since this is the only practical research program on CAI Physics for upper secondary school being carried out in Japan, the evaluation will result in the provision of important data for CAI and upper secondary physics curriculum research. For these purposes, this project was set up for three years from 1979 and is supported by a Scientific Research Grant of the Ministry of Education.

Research Content

The curriculum for the above-mentioned experimental CAI program will be evaluated in terms of the following four aspects – (1) appropriateness of cognitive process steps and branching, (2) analysis of learning patterns (including cognitive processes) for important items, (3) measurement of memory retention in the case of basic concepts and laws for which a high level of retention is required, and (4) elimination of ambiguity and difficulty in understanding key frames. For these purposes, individual learning activity details, correct/incorrect responses, and learning time for all students over a period of one year are being recorded on floppy disks.

In regard to (1) and (2) above, cognitive process steps are being analyzed for the topic "force and movement." Individual differences in CAI learning are very great, but it is possible to classify learning patterns on the basis of overall performance and correlations with certain other subjects. In regard to (4) above, the students have been asked to indicate words and sentences they find difficult to understand. They

were then asked the reason for the difficulty, and an indication of trends in the understanding of the language used is being obtained. Then, on the basis of such information, predictably difficult words and sentences will be checked and rephrased in language which is easier to understand.

LANGUAGE EXPRESSION AND CONCEPT FORMATION IN SCIENCE EDUCATION

This is the last year of this research, which has been in progress since 1977, and which consists of a study of language in science education, with emphasis on terms used in science study and the relationship between language expression and concept formation. This project involves the six research groups described below, each of which shares part of the research tasks and proceeds in close contact with the other groups.

Group to include NIER, National Japanese Research Institute, and Shizuoka University

This group is in charge of organizing and classifying science terms used in compulsory education, carrying out a survey of the degree to which students understand such terms, and producing basic reference materials for use in reforming science education terminology. One of the causes of difficulty in understanding science materials is the fact that they are written in language that is difficult for students to understand. In terms of terminology, students have difficulty not only with scientific terms, but also with vocabulary related to methodology and that used in indicating conditions and degree in phenomena. An analysis is therefore being made of examples of the use of such terms. A typical result is the discovery of the fact that *'ittei no'* is used in the following four ways:

(a) to indicate a unique specific value, e.g., "The temperature at which a liquid boils is *fixed* according to the nature of the matter involved,"

(b) to indicate various specific values, e.g., "A chemical compound is composed of elements combined at a *certain* ratio,"

(c) to indicate one arbitrary value, e.g., "In order to lift baggage up to a *certain* height, ... ," and

(d) to indicate that the condition continues, e.g., "If force is not exerted, the speed remains *constant*."

The Group of Gakugei University

This group is developing third year upper secondary school textbooks for use in improving such language skills as the accurate communication of facts and conditions, the clear expression of opinions, and the expression of logical/theoretical reasoning.

The Group of Tokyo University

This group is interviewing Japanese and American mothers and making a comparative study of the language these mothers use in controlling the behavior of their children.

The Group of Gifu University

This group is surveying and classifying the use of operational language in elementary school textbooks, and developing basic reference materials for use in instruction.

The Group of Shimane University

This group is carrying out experimental instruction with kindergarten, elementary, and lower secondary school classes in order to compare teaching which begins with an experiment and that which begins with explanation. Related written materials produced by these children as part of the instructional activities are being analyzed and such things as instructional methodology and the relationship between level of development and concept formation are being investigated.

The Group of Hiroshima University and Saga University

This group is analyzing communication during science instruction activities and investigating the relationship between key words used in instruction and student understanding. Materials have also been collected concerning language use in science education in foreign countries.